Are average PC cost figures meaningless? Paul Strassmann thinks so. Managing, page 64

It's do-or-die time – again – for OpenDoc as users try out new Windows version. Page 45

COMPUTERWORLD

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Microsoft missteps vex users

▸ *Cross-platform fears push some users to reject Visual J++ tool*

By Sharon Gaudin

SOME ONCE-LOYAL Microsoft Corp. users, fearing vendor lock-in to the Windows platform, are snubbing the company's Visual J++ and turning instead to rival products from Sun Microsystems, Inc. and Symantec Corp.

GTE's Larry Hagerty wants Microsoft to play by the standard set of Java rules

Visual J++ is a visually oriented development environment designed to build Java applications and applets. Unlike the Sun and Symantec tools, Visual J++ lets developers use Windows-specific ActiveX controls and hooks into Windows-specific libraries.

The catch is that using either set cancels out Java's cross-platform capabilities — a big part of what has made the language so popular.

Visual J++, page 17

▸ *NT 4.0 fix falls short, wreaking more havoc for irate customers*

By Laura DiDio

MICROSOFT NEEDS to patch the patch.

The latest bug-fix software for Windows NT 4.0 is creating more problems than it is solving. Microsoft Corp. has confirmed hundreds of complaints — including Blue Screen of Death systems crashes.

Fourteen users and several systems integrators contacted by *Computerworld* said Service Pack 2 for Windows NT 4.0 crashes their systems upon installation, often resulting in lost files and hours or even days of downtime.

FRUSTRATION REIGNS

The crashes occur because of the product's incompatibility with mainstream applications, including McAfee Associates, Inc.'s VirusScan and Symantec Corp.'s Norton AntiVirus programs.

Such claims were backed up by an avalanche of similar complaints on Microsoft's Windows NT Internet and CompuServe user forums. Frustration prevailed among most of those users, many of whom sought free answers on the forums rath-

NT 4.0 fix, page 103

Server shortcomings stall virtual malls

By Suruchi Mohan

WHEN RICHARD WARREN started building commerce-based Web sites at Judd's, Inc. more than a year ago, one of the only products available was Netscape Communications Corp.'s Commerce Server. But he quickly grew disappointed with what he called "a poorly done hack of a Unix product."

"It was a fish out of water in a [Windows] NT operating environment," says Warren, vice president of information systems at the Strasburg, Va., printer of catalogs and magazines.

Warren is one of eight experienced managers at commerce sites who were asked to advise their peers in this week's *Computerworld* Buyer's Guide. The managers primarily were frustrated by a lack of full-function commerce server products.

The most surprising advice came from Bruce Judson, general manager of Time, Inc.'s New Media. He suggests dividing an electronic commerce budget into thirds, banking only one-third on the first product. If that one fails, the second chunk is earmarked for a different product. The last third, he adds, should be saved for marketing.

Commerce servers, page 75

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USERS SAY YOUR MILEAGE MAY VARY – A LOT. PAGE 6

ATTACK BY SATAN

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PC warranty changes may up user costs

By April Jacobs and Mindy Blodgett

SEVERAL PC MAKERS, including Dell Computer Corp. and Hewlett-Packard Co., last week confirmed they are quietly reconsidering their warranty policies — a move that would pass on more of those costs to users.

That has users on the alert; some say they are already seeing slower turnaround times for repairs, slimmer warranties and premium fees for product support.

Warranties, page 16

Sun touts biggest server

By Jaikumar Vijayan and Tim Ouellette

SUN IS TAKING its enterprise computing ambitions deep into mainframe territory.

Sun Microsystems, Inc. is getting set for a Jan. 22 launch of what is positioned as the biggest Unix server to date — a 64-processor symmetrical multiprocessing system based on Sun's latest 250-MHz UltraSPARC chips.

The Mountain View, Calif., company will also unveil a high-availability RAID storage array, as part of a move to extend sup-

Sun, page 12

Not going home

The bad news just kept pouring in last week from electronics retailers: Circuit City's December sales were off 13%, Tandy plans to dump a chain of outlets, CompUSA's sales slowed in the quarter and Apple blamed a loss on slow sales of its home computer line.

It looks as though sales of PCs to consumers have leveled off. It may be time for the industry and many IS organizations to ask some tough questions.

My interpretation of the news is that the market for high-priced, high-function PCs is becoming saturated at about 40% of U.S. homes. Any significant new sales from here are going to require either big price reductions or attractive new features.

The home PC market is becoming saturated

The latter option is unlikely. For two years, PC makers have focused on stuffing systems full of graphics geegaws to make them more attractive to home users. But you can only run "Doom" so fast. Intel's Pentium MMX chip and the new line of 56K bit/sec. modems (see story, page 6) may help somewhat, but those are incremental improvements on existing stuff. Cable modems are still a while off.

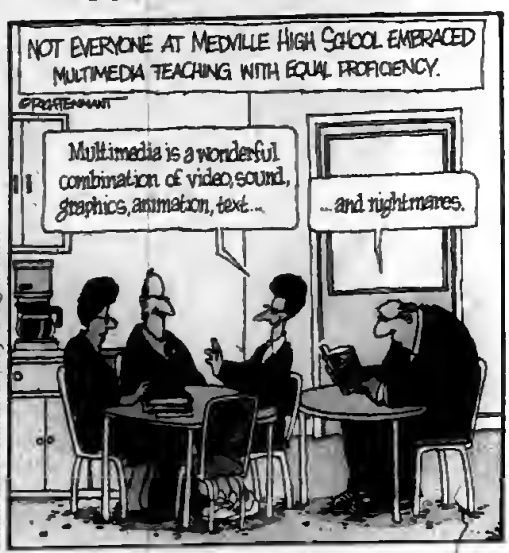
A more likely scenario is that growth in the PC market will shift to the sub-$1,000 price point. Buyers of these machines aren't the types of users who are likely to invest lavishly in software, Internet services and time to learn how to use their new toys. They also aren't going to spend hours learning to do their banking or stock trading online.

The implications for financial institutions, retailers and information providers are important. If your business model assumes that PCs will one day be as ubiquitous as toasters, you may be in for a rude surprise. You might do better to focus on the 40% of the population that has already shown a willingness to invest in the technology. And be prepared to wait. I think the home market is in for a long slog from here.

Paul Gillin, *Editor*
Internet: *paul_gillin@cw.com*

THE FIFTH WAVE

BY RICH TENNANT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YEAR 2000

Visa leads charge for compliance

▶ *Business partners that miss deadlines are threatened with fines*

By Thomas Hoffman and Robert L. Scheier

Tom Jeffery at Kay-Bee Toy Stores says the retailer's credit-card customers "have not had any year 2000 issues" so far

VISA INTERNATIONAL, Inc. has threatened to impose fines of more than $160,000 per month on any of its 20,000 member banks, as well as credit-card processors and merchants, that fail to make their credit-card processing systems year 2000-compliant.

Visa is using the threat of financial penalties to force a few slow-moving business partners to speed up their year 2000 conversion work.

Other businesses may try the same tactic, analysts said. "Penalize or remove the franchise — that will become a common practice," said George Kivel, a technology analyst at The Tower Group, a financial services consultancy in Newton, Mass.

EARLY EXPIRATION

Visa in San Mateo, Calif., the world's largest credit-card company, is launching the penalty system to ensure that the systems in its consortium can process cards with expiration dates that read "00" or higher in the year field. Otherwise, systems will conclude that valid cards have expired.

"We decided to take a stand," said Sam Galdes, vice president of service quality at Visa.

Visa members have made "reasonably good" progress, Galdes said. "The problem is, reasonable isn't good enough for us."

"We have been aware for some time of Visa's intentions, and we are well on our way to meeting their deadlines," said Mike Vertigans, a spokesman at National Westminster Bank PLC in London.

COSTLY PROJECT

Vertigans declined to specify how much National Westminster is spending to upgrade its credit-card processing systems but noted that the bank's year 2000 project budget for the next three years is about $101.4 million.

"We have taken all the appropriate steps to avoid penalties," said a spokeswoman at Royal Bank of Scotland in Edinburgh.

For example, the bank has updated all the point-of-sale terminals it owns and rents out to retailers, and has "taken steps" to notify the retailers to upgrade their own systems.

Galdes declined to quantify the size of the fines that Visa plans to impose, nor would he specify a deadline for year 2000 compliance. However, a story in *The Times* of London last week said that after April, banks that have problems processing Visa cards will be charged up to about $169,100 per month, depending on volume, until they correct the bug.

FEW FAILURES

Galdes said Visa so far has experienced a "very, very small" number of year 2000-related credit-card processing failures. He also expressed confidence that all the businesses that process Visa transactions will fix their problems in time.

"We don't expect to be levying an awful lot of fines to the membership," Galdes said.

Tom Jeffery, vice president of management information systems at Kay-Bee Toy Stores in Pittsfield, Mass., said the toy retailer's credit-card customers "have not had any year 2000 issues" to contend with so far.

Meanwhile, a spokesman at MasterCard International, Inc. in Purchase, N.Y., declined to comment.

SEC tracks 2000

Visa isn't the only organization worrying about the effect of year 2000 work on business. It is also on the radar screen of the Securities and Exchange Commission (SEC).

As part of their regular review of documents submitted by public companies, SEC staff members are examining the effect on earnings of companies' year 2000 conversions, said SEC spokesman John Heine in Washington. The SEC reviews filings to ensure disclosure of anything that could significantly effect earnings or stock prices.

"There have been situations where the staff has suggested that the year 2000 situation needs to be dealt with, or dealt with in a different way, or more thoroughly" in companies' filings, Heine said. He declined to give details and said the SEC has no plans to require companies to disclose their year 2000 efforts as a regular part of SEC filings. — Robert L. Scheier

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Corporate coders leery of Microsoft pitch

By Frank Hayes

MICROSOFT CORP. is making its biggest push yet to grab corporate developers, even as many of those developers edge away from Microsoft's Windows-oriented approach to Java (see related story, page 1).

On March 19, Microsoft will launch new versions of its development systems for Visual Basic, C++, Java and the Internet at its Developer Days presentations across the country, the company has confirmed.

APPLICATION DEVELOPMENT

The releases include Visual Basic 5.0, Visual C++ 5.0, Visual J++ 1.1 and InterDev 1.0, as well as Visual FoxPro 5.0 and the developer's edition of Office 97.

BAD BUNDLE?

But corporate developers are leery of Microsoft's plan to bundle programming environments into a single suite of tools.

"Visual Basic and Visual C++ are the farthest apart — the whole environment is completely different," said Richard DiBiasio, director of software development for the imaging group at Fidelity Investments in Boston.

"If they're just going to make it like Microsoft Office — just a collection of discrete packages — then big deal," DiBiasio said.

Microsoft wouldn't provide details about either the new releases or how they will be tied together. The company is currently testing a multilanguage development environment, code-named Boston [CW, Dec. 16, 1996].

But that may not appeal to corporate programmers. "Developers get comfortable with their tools. We have fights about [changing to] different editors here," said Chris Kwiecinski, a senior systems developer at Nabisco, Inc. in Parsippany, N.J. "I don't think [bundling] will get developers who use one Microsoft product to use [Microsoft's] other tools."

'Skills gap' gnaws at IS managers

GROUPWARE MESSAGING

Microsoft changes its MIME

By Barb Cole

RACING TO ADOPT Internet protocols, Microsoft Corp. has decided to support an open standard for linking messaging-based groupware systems instead of its own proprietary interface, *Computerworld* has learned.

Now Microsoft is pushing Multipurpose Internet Mail Extensions (MIME) for groupware interoperability, not the Workflow Messaging Application Programming Interface (MAPI) it published last April, a Microsoft official confirmed.

The software giant has put its weight behind a MIME-based groupware standard being shaped under the auspices of the Internet Engineering Task Force.

MIME is a method for attaching items other than plain text — such as highly formatted text and graphics — to E-mail.

Products that comply with the MIME-based standard will allow users to pass information between applications such as Microsoft's Exchange and Lotus Development Corp.'s Notes.

Users applauded the switch to MIME but said they would like a more clear picture of Microsoft's developing groupware strategy.

"I'm glad to see [Microsoft] thinking in terms of open standards, but we have to decide now how to build workflow applications," said Greg Deckler, a systems integrator who is deploying Exchange at a large manufacturing company.

Users began to suspect that Microsoft was shifting gears last October when an interoperability specification published by the Workflow Management Coalition (WMC) industry group was released using a MIME implementation. The WMC and Microsoft earlier had said the spec would be based on Workflow MAPI.

By the time the WMC specification was published, "we were already pursuing another [groupware standards] effort based on MIME," said Suresh Velagapudi, product manager for Exchange at Microsoft.

Saros unveils package to track workflow. Page 52

Booking business travel on 'net

▸ *Corporations go online to save money with customized applications*

By Mitch Wagner

COMPANIES ARE turning to a technology that's going places — the Internet — to help employees get where they need to go.

Corporations such as Texas Instruments, Inc. and Charles Schwab & Co. are conducting large-scale tests of systems that will let employees book their own travel over the Internet.

Booking travel via the Internet has been possible for more than a year. What makes the emerging corporate systems different is that the user sees only the information tailored for his firm, such as negotiated rates and preferred vendors. Options that are forbidden by the corporate travel policy don't appear.

The systems also have links among the travel systems and corporate accounting and expense-reporting systems.

Users said they hope to save money by cutting bureaucracy and improving employee conformance to corporate travel guidelines.

"As the company grows and adds more people, you can't keep pushing the walls out and adding more bodies to accommodate the volume. You have to improve productivity. And electronic booking is the only way to do that," said Bob Grant, director of corporate travel at Schwab in San Francisco.

Grant said he hopes to reduce the per-transaction cost of setting up a business trip from $40 to $8.

TI's goal, less lofty, is still ambitious: Use Internet-based systems to save $1 million from the anticipated $200 million travel and entertainment budget this year, and save $11 million in the next five years.

PIONEERS

Companies experimenting with Internet-based bookings for business travel:

- **Texas Instruments: In use by 100 employees, with 300 more coming online this month.**
- **Charles Schwab: Now in use for less than 10% of travel bookings. Hopes to drastically increase usage with aggressive internal campaign, following rollout of corporate intranet in March.**

MANY CHOICES

Meanwhile, the travel industry is rolling out systems to allow corporations to set up Internet-based travel-booking. These include the following:

- Possibly the most widely used system to date — Internet Travel Network, Inc.'s ITN. The company is beta-testing the system with about 50 companies, including Schwab and TI. It provides direct access to computerized airline, hotel and car-rental reservations systems.
- The Sabre Group is testing an Internet-based front end to its existing reservations system. Cisco Systems, Inc. in San Jose, Calif., is testing the system — code-named Laredo — for its employees.
- American Express Co. and Microsoft Corp. are jointly building the American Express Interactive system.

The project, formerly code-named Project Rome, is due to go into beta testing in the next few months and will become generally available by June [CW, Aug. 12, 1996].

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& Saros unveils package to track workflow. Page 52

NEWS

'Skills gap' gnaws

Michaeleen Kruger, Reliastar Financial

By Kathleen Melymuka

"For months we've been trying to fill a network director job that reports to me," Michaeleen Kruger says. Meanwhile, "I'm covering half [of the job] while the network manager covers the other half.

"I end up making a lot of decisions about things more technical than I am. I have an MBA in finance, and I'm stretched down to unknown technology territories. And that's scary.

"When I find myself in a technology gap, I gather everyone around, and we put our strengths together and say, 'You know the tech piece; I know this

People who need people, page 64

Booking business travel on 'net

• Corporations go online to save money with customized applications

By Mitch Wagner

COMPANIES ARE TURNING to a technology that's going places — the Internet — to help employees get where they need to go.

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Caution advised on management suites

▸ *Total packages can disrupt established systems*

By Patrick Dryden

INTEGRATED SUITES of tools can reduce the cost and complexity of managing client/server environments, but they aren't for everyone.

Not yet, anyway.

Some analysts and users warn that point products that were designed to solve immediate needs for tasks such as inventory, software distribution and backup will remain the preferred choice for the next five years, until do-it-all management suites prove their capabilities and savings.

That means information technology managers should keep their heads above the flood of vendor claims as they plot their strategies for gaining a unified view of their distributed networks, systems and applications.

"We don't see any success stories yet from anyone using a suite to manage an entire organization," said Alison Palmer, a research analyst at Hurwitz Group, Inc. in Watertown, Mass.

TransQuest's John Cahill: **"We're just starting out with [Tivoli's TME 10] software distribution function"**

NARROW NICHE

Only about one-fourth of the market will want a complete, unified suite so they can "just plug in the damn thing and have it all work" like a packaged home entertainment system, said Paul Mason, an analyst at International Data Corp. in Framingham, Mass.

But within four to five years, almost every point product will work in some way with a suite, Mason said, because of user demand for seamless tool integration and product choice.

Computer Associates International, Inc. this month will begin a massive rollout of Version 2.0 of its CA-Unicenter suite.

Tivoli Systems, Inc. will push the new global-view version of Tivoli Management Environment (TME 10).

Both efforts expand the reach of enterprise management suites that began to gain attention only last year.

As the rivals escalated their battle for users, several IT managers told *Computerworld* they have taken the "golf and demo junket" to CA in Islandia, N.Y., and IBM's management division headquarters in Austin, Texas. And they said sales representatives continually pound on their doors and attempt to tie the suites in with negotiations for other products, such as mainframe applications.

But such suites are "disruptive and costly" for mature organizations that already have "bought the tools of the day and tied them together with home-grown code to manage distributed computers," said Michael Tardif, vice president of enterprise technology for operations and systems management at Goldman, Sachs & Co. in New York.

The financial firm will continue to fix one management problem at a time by using the best available tools, Tardif said, "without all the baggage" of a suite of "just good enough" tools.

Implementing a suite would generate "a huge bill, yet we couldn't cut head count to achieve savings for years while we unwind all our separate tools and retrain staff," he said.

Other users are moving cautiously toward a suite future.

SELECTIVE

Some large organizations such as TransQuest, Inc., the IT subsidiary of Delta Air Lines in Atlanta, opt for some, not all, portions of a suite.

One factor in TransQuest's choice of TME 10 was that the suite doesn't displace other preferred tools and doesn't displace Hewlett-Packard Co.'s OpenView network management platform, said John Cahill, assistant vice president for production services at TransQuest.

"We don't want to feel forced into adopting anything," Cahill said.

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20 COMPUTER ASSOCIATES

New CA-Paradigm

Excited by 56K modems? Not so fast!

By Mindy Blodgett and Kim Girard

SKEPTICAL USERS and industry observers are starting to seriously question whether modem makers can deliver on the promise of 56K bit/sec. technology.

When word came in September that several companies were preparing a chip set that would double the speed of 28.8K bit/sec. modems, users heaved a sigh of relief.

Users anticipated a faster way to connect to the Internet, without the cost, limited access and configuration headaches of Integrated Services Digital Network (ISDN), which offers 128K bit/sec. of bandwidth.

The analog modem promises 56K bit/sec. speeds over regular telephone lines when users download information from the Internet and 28.8K to 33.6K bit/sec. speeds when they send requests for information.

SPEED NOT ASSURED

But Wen Luo, a senior analyst at Jupiter Communications, Inc., a New York-based consultancy, said users shouldn't hold out hope for modem speeds of more than 40K bit/sec. And to get that, she said, users would need clean phone lines and servers that aren't overloaded.

Michael Dziak, general manager of the Metro Atlanta Telecommuting Advisory Council in Snellville, Ga., and president of InteleWorks, Inc., a telecommuting consultancy, said he can't even get 28.8K bit/sec. speeds now.

"You really can't do much more over analog lines," Dziak said. "I already am dropped in midconnection to the Internet enough that I know if I try to speed up the transmission, it won't work."

The main problem is that analog lines were designed to suppress noise at the expense of speed. Connections at higher speeds are often dropped because the lines can't handle the traffic.

"I'm scared of 56K [bit/sec.]," said Teresa Milly, a telecommunications systems engineer at Lockheed Martin Corp.'s enterprise information services division in Orlando, Fla. "I'm not sure the [the telephone system] can support it."

Milly's division has 2,000 telecommuters and users who were upgraded from 14.4K bit/sec. to 28.8K bit/sec. modems in April 1996. Since then, she said, users have complained about lost connections and problems with noise interference on phone lines.

U.S. Robotics Corp., which has been leading the charge, recently acknowledged that users won't be able to connect at the full 56K bit/sec. speed but at 53K bit/sec. instead. That is because of Federal Communications Commission rules to protect switching equipment that could get overloaded by high-speed transmissions, according to Larry Kraft, manager of product marketing at U.S. Robotics in Skokie, Ill.

U.S. Robotics is seeking a waiver for its X2 technology, which it is testing, to reach the 56K bit/sec. that the company insists is attainable.

But the overall slowdown of the Internet poses another obstacle to fast downloading of information.

"Just making the access pipe faster doesn't make the Internet faster," said Tom Nolle, president of CIMI Corp., a consultancy in Voorhees, N.J.

Nolle said his company recently asked 55 users to connect to the Internet using 28.8K bit/sec. modems. Only two made the connection at 28.8K bit/sec. speeds, he said.

"I think with 28.8, we got as far as you can realistically expect modem technology to go," Nolle said. "If someone wants to go faster, then they need ISDN. Period."

To use 56K modem technology, dedicated hardware is required at the user's end and on the Internet service provider's side.

Lack of standards grates users

Users are growing uneasy about the lack of standards in the debate over 56K bit/sec. modem technology.

Rockwell Semiconductor Systems and Lucent Technologies, Inc. are working on products based on one standard, while U.S. Robotics is developing competing products and standards.

Earl Perkins, a network manager at Entergy Corp. in New Orleans, said he is interested in the technology, but the lack of standards worries him.

"You want these modems to be able to talk to each other," Perkins said.

The Telecommunications Industry Association expects to hammer out an interoperability standard by June, but industry experts suspect the group won't be finished until year's end.

Lucent and U.S. Robotics expect to ship products in this quarter, and U.S. Robotics is currently conducting trials of its modems.

"Unfortunately, standards aren't ready. So we can wait and watch our competition come out with something, or we can come out with something as well," said Martin Rauchwerk, manager of modem marketing at Lucent's microelectronics division.

Renee Bader, senior director of product marketing at Xircom, Inc. in Thousand Oaks, Calif., said the standards war is a problem. Xircom is working on 56K bit/sec. products using Lucent's technology.

"It's a significant disservice to users," Bader said. "We hope they figure it out in a short time frame."

— Mindy Blodgett and Kim Girard

Here's how it works

When a user sends a request for a World Wide Web page to an Internet service provider, the data packets travel over analog lines to the phone company switch, where the information is converted to a digital signal. That signal is converted back to analog before it reaches the Internet service provider's modem. That step slows the request to between 28.8K and 33.6K bit/sec.

However, when the Internet provider sends back the digital Web or an FTP file, the information travels, ideally, at 56K bit/sec. But here's the hitch: If you try to send that same information to a friend who has a 56K bit/sec. modem, your speeds will drop to 33.6K bit/sec. Both ways your analog lines become there is no digital break.

But analysts said users should, in many cases, expect to squeeze no more than about 40K bit/sec. from the 56K bit/sec. technology because of line interference and backed-up servers.

Exchange users may not take new Outlook

By Barb Cole

MICROSOFT EXCHANGE customers migrating to Outlook, the new 32-bit client, will get added mail and groupware features — but at a price.

Exchange sites that are beta-testing Outlook have found that they have to boost end-user training because of the product's new features. And information systems managers have to migrate groups of users dependent on calendaring and scheduling at the same time because users won't be able to thoroughly share schedules between the two client platforms.

This lack of backward compatibility in the schedules will be felt most by companies whose workers need to modify each others' schedules.

"I have a core group of executives and department heads that constantly use that [scheduling] feature, so I have to move them all at the same time," said Mark Schmidt, IS director at Heritage Broadcasting Group, Inc., a Tustin, Mich., company that operates several television stations.

"I'm not happy about this, but I'm also not surprised," Schmidt said. He recalled that he faced the same hurdle when he moved users from Microsoft Corp.'s Mail to Exchange.

Microsoft said it is developing a driver that will allow full compatibility, but the company declined to specify when that driver would be available. Some large Exchange customers were told by the company that the fix would show up in the next three months.

Outlook pros

- Additional groupware functionality
- Tightly integrated with Office 97
- New personal productivity applications

Outlook cons

- Heavier end-user training required
- Some incompatibilities between Outlook and Exchange

Outlook, which ships this week, builds on the Exchange client's electronic-mail and scheduling features by adding contact management, a journal that tracks the work users do on their desktop and a notepad.

Outlook will be available as a stand-alone product and come bundled with Microsoft's Office 97 application suite and the forthcoming Exchange 5.0.

LEVEL PLAYING FIELD

Users said the new mail client will help put Exchange on more level ground with products such as Lotus Development Corp.'s Notes. Users also said the messaging migration is seamless.

"From a mail perspective, the move [from Exchange client to Outlook] is transparent," said Erik Iversen, director of application development services at Nabisco, Inc. in Parsippany, N.J.

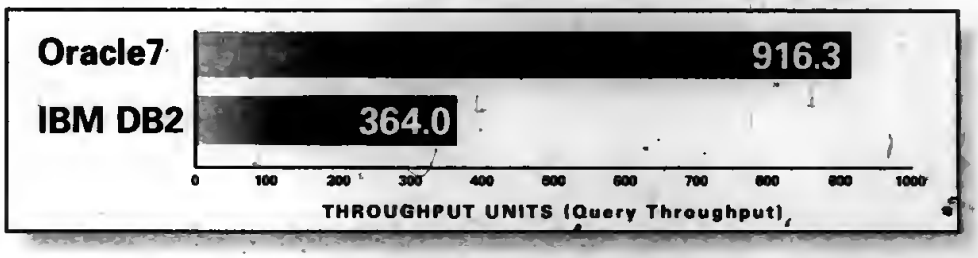
"The problem isn't in moving to Outlook; it's that once you get there, you may have to keep Schedule+ [95] on your machine" because of the compatibility problem, said Kirk Reeves, a systems engineer at the Kentucky Department of Education. The department has moved more than 25,000 users from Microsoft Mail to Exchange.

End users will likely need some hand-holding in the early days of Outlook, said Ned Studt, a systems integrator at Valinor, Inc. in Manchester, N.H. The "Exchange [client] was very similar to [Microsoft] Mail, but Outlook isn't as intuitive." Plus, there is so much functionality in Outlook that users will need more training, he said.

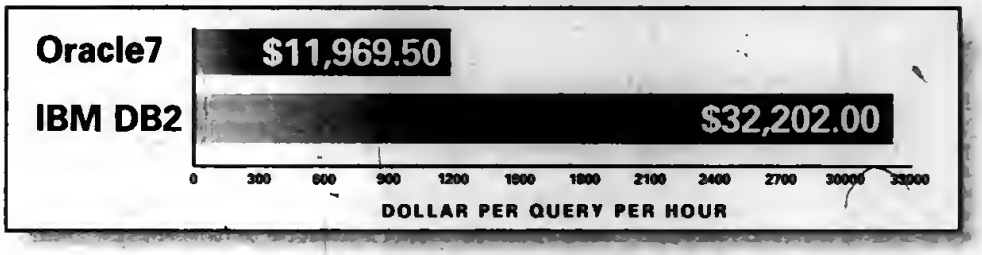
Oracle7 Parallel Server: Almost 3 Times Faster than IBM DB2/Parallel Edition

The TPC-D is the industry standard benchmark for measuring query performance on large complex databases. On the fastest hardware that IBM makes, the RS/6000 SP, running against an identical 300 GB data warehouse, Oracle7 Parallel Server's TPC-D performance was almost twice as fast with almost three times the throughput as IBM's own DB2/Parallel Edition. What's even more amazing, Oracle delivered this performance at nearly one-third the price.

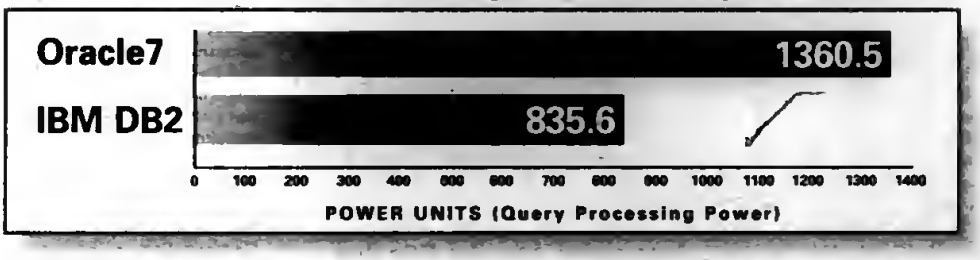
Almost 3 to 1 Faster Multi-user Throughput



Almost 3 to 1 Cheaper Price Performance



Almost 2 to 1 Better Single User Response Time



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Web site offers job lists, search services for free

By Julia King

"ABSOLUTELY FREE" are the first two words Warren Bare uses to describe his company's new Internet-based recruiting and job-search service, HeadHunter (www.headhunter.net).

Hiring managers pay nothing to list job openings or to access the World Wide Web site's bank of 300 resumes, which is growing at a rate of 50 resumes per day.

Job seekers can also cruise for free through HeadHunter's 1,400 job postings, which are mostly in information systems and can be searched by location, job title, skills or any other criterion.

For example, a job seeker can request all positions for an Oracle database administrator that pay more than $80,000 annually and are located within 100 miles of Atlanta.

If Bare, president of Software Technology Corp., a software consultancy in Suwanee, Ga., ever turns a buck on the site, it will be from advertisers. But so far, they have yet to sign on.

"To be honest, we don't know how we're going to make money at it," Bare said. "Right now, it's really more of a public service than anything else. We have yet to collect penny one from any company."

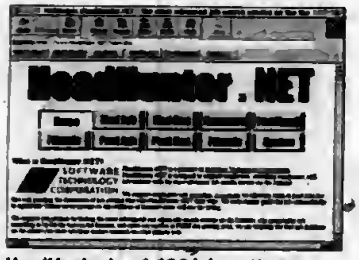
SMALL IS BEAUTIFUL

HeadHunter isn't the only free jobs site on the Web. And compared with more established services, such as The Monster Board (www.monster.com), it is a minnow.

But ironically, that is exactly what makes it attractive to recruiters such as Nancy Marzilli at Mercury Computer Systems, Inc. in Chelmsford, Mass.

"Other services are so congested now with job postings that they're just not as effective," Marzilli said.

Posting jobs on a newer, lesser-known service may mean less traffic initially. But Marzilli said it also offers her a better chance to make her company stand out.



HeadHunter has 1,400 job postings that can be searched by location, job title, skills or other criteria

Skills shortage delays projects

By Julia King

A FEW MONTHS back, BancOne Corp. in Columbus, Ohio, put the brakes on an ongoing electronic commerce project while its consulting partner recruited skilled people to work on the Internet application.

Georgia-Pacific Corp. has postponed the development of Internet and intranet capabilities because of a lack of skilled information systems professionals. The Atlanta-based company is also defending itself against raids on its experienced SAP AG team.

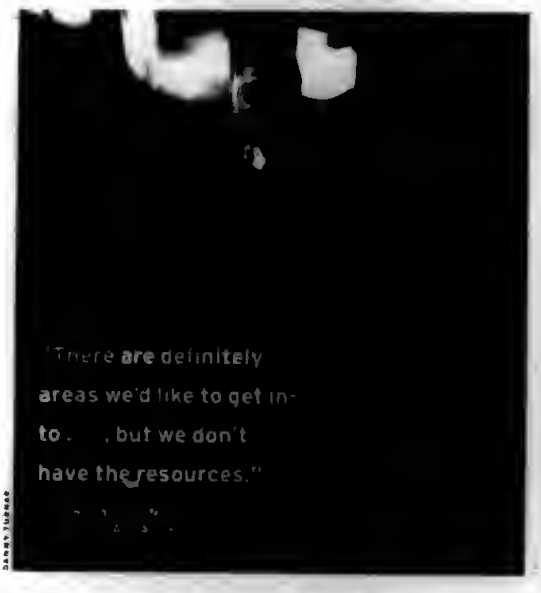
SKILLS SURVEY

It isn't alone. Seven out of 10 companies worldwide can't find the skilled IS staffers they require, according to a new survey of 1,442 chief information officers. The survey was conducted by Deloitte & Touche Consulting Group in Chicago.

As a result, companies are scaling back new systems development, particularly on Internet and client/server projects.

"There are definitely areas we'd like to get into, like more lab work and experimentation with the Internet and intranets, but we don't have the resources," said Carl Wilson, vice president of information resources at Georgia-Pacific.

In Cambridge, Mass., Natural Intelligence, Inc., which develops Internet and client/server applications, is turning away work.



"We have business opportunities we're unable to take on with our current staff because we have our pedal to the metal," said John Magee, director of consulting services.

"We're looking to hire the same people these [client] companies are, and we're having a hell of a time doing it," he said.

A lack of resources is also to blame in general for significant delays in client/server migrations, said Steve Pliskin, a partner at Deloitte & Touche.

"Right now, 50% of applications run on client/server, and in two years, CIOs say it'll be 75%. But only 30% of these are mission-critical applications," Pliskin said.

"That means the really big applications haven't moved yet, and it appears to be from a lack of qualified people," he said.

In the Deloitte & Touche survey, CIOs cited a lack of qualified personnel and the complexity of multivendor environments as the major barriers to client/server implementation. More than 80% of CIOs also said they expect their client/server expenditures to increase in the year ahead.

SHORTS

Rivals meet over Java

The major players in the software industry met last week to haggle over standards for the Java development language. Officials from IBM, Apple Computer, Inc., Netscape Communications Corp. and Microsoft Corp. gathered at Sun Microsystems, Inc.'s Cupertino, Calif., headquarters in what a spokesperson at Sun's JavaSoft division said was an informal meeting to jumpstart face-to-face talks. The software vendors met at the urging of the Switzerland-based International Standards Organization.

Microsoft zeros in on Mac

Microsoft, the leading software developer for the Macintosh, has formed a division with 100 developers to work on Microsoft Office for the Macintosh. For users, Microsoft's move may mean Macintosh versions of Microsoft's applications will no longer come out six to nine months after the Windows versions are released. However, Office 97 for the Macintosh isn't likely to ship until fall, well after the original midyear delivery date.

FCC rules on frequencies

The Federal Communications Commission last week approved a plan to set aside a spectrum of radio frequencies for data communications over a range of up to several miles. The decision sets aside 300 MHz of spectrum in the 5-GHz range for high-speed data communications.

Low-power spec for PCs due

Microsoft, Intel Corp. and Toshiba America Information Systems, Inc. announced that they will publish an open specification to enhance power management of PCs. Officials at the vendors said the Advanced Configuration and Power Interface will allow for PCs to perform automated tasks in a "low-power sleeping state" that can be used instead of turning off a PC.

DEC cuts AlphaServer prices

Digital Equipment Corp. last week slashed prices across its entire AlphaServer line as much as 47%. The company also rolled back prices by up to 42% on its Alpha workstations lines and 55% on memory options. And it introduced new base-level server configurations that provide as much as four times the memory of current systems at almost the same cost.

SHORT TAKES Dell Computer Corp. in Austin, Texas, will announce its PowerEdge 6100 quad-processor Pentium Pro-based server the week of Jan. 21. ... Zenith Electronics Corp. in Glenview, Ill., will launch a family of Internet television products, set-top boxes and integrated TV sets with interactive features based on N/C System Software from Oracle Corp. ... Intel and Microsoft unveiled separate videophones that can be used on the Internet. Video cameras will cost about $150, and software will be required. ... Compaq Computer Corp. and Hayes Microcomputer Products, Inc., a leading modem maker, plan to have products that support 56K bit/sec. technology on store shelves by the end of March. ... Borland International, Inc. in Scotts Valley, Calif., is showing off its new C++ visual rapid application development tool, Borland C++ Builder. It is available at the company's World Wide Web site (www.borland.com).

Fortified LAN switches will save users bucks

By Bob Wallace

USERS WILL SOON get greater horsepower and flexibility from LAN switches thanks to major performance enhancements expected to be announced this week by Digital Equipment Corp. and Madge Networks, Inc.

Digital will unveil a switch-based package that will let users boost the performance of their Internet Protocol (IP) networks without having to buy Asynchronous Transfer Mode (ATM) switches, according to sources briefed by the vendor.

Madge will announce the 3LS, an advanced routing module for its LANswitch system that eliminates the need to buy and maintain stand-alone routers, according to documents obtained by *Computerworld*.

"Digital and Madge are giving users more functionality without requiring huge new investments in new technologies," said Daniel Briere, president of TeleChoice, Inc., a consultancy in Verona, N.J.

POWER SWITCHES

Product/Feature	Benefit
Digital packet-based IP switching	▮ Boosts IP network performance without requiring ATM switches
FDDI-to-ATM module	▮ Lets users link FDDI switches to ATM backbone networks
Madge 3LS	▮ Builds advanced routing into switches and helps wean users off routers ▮ Supports Routing Information Protocol, Open Shortest Path First protocol and Address Resolution Protocol ▮ Works with existing switching modules

"But they both have an uphill battle to catch the Big Four in market share," he said, referring to Cisco Systems, Inc., 3Com Corp., Cabletron Systems, Inc. and Bay Networks, Inc.

Digital's package will bring the benefits of IP switching to users of its flagship GigaSwitch FDDI (Fiber Distributed Data Interface) switching system. The cell-based IP switching scheme Digital first embraced had required customers to buy ATM switches.

But Maynard, Mass.-based Digital has developed a scheme based on packet technology, which is what most LAN switches use today. Users can save thousands of dollars by not buying an ATM switch and getting the performance boost that IP switching provides to IP networks, sources said.

"This is a nice [offering] that will enable users to build high-performance networks based only on switches," which are more cost-effective than networks based on high-speed routers, said Marc Josephson, president of Advanced Digital Networks, Inc. in New York.

The packet-based switching package will ship by the end of the first quarter.

Digital also plans to unveil a module that will provide users flexibility by letting them link the GigaSwitch FDDI to ATM backbone networks, the sources said. It will ship by year's end.

The 3LS module from Madge in San Jose, Calif., will cost an estimated $16,995 and allow users to either decrease their reliance on existing routers or do without routers altogether in new installations.

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Netscape lets Collabra Server beta out of box

By Justin Hibbard

NETSCAPE COMMUNICATIONS CORP. this week will release the first beta version of Collabra Server, which provides threaded discussion groups reminiscent of proprietary groupware but based on Internet standards.

Beta testers said the server's standards-based architecture makes it easier to use and more interoperable with other products than proprietary groupware.

But one information systems department reported that Collabra may have a tough time beating a conferencing application developed in-house for a corporate intranet.

Collabra Server uses the highly scalable Network News Transfer Protocol (NNTP), which Internet news servers use to support more than 25,000 discussion groups with message volumes of 4G to 5G bytes.

The protocol also lets administrators replicate Collabra Server's contents to other NNTP servers, specify redundant links, replicate to specific forums and define replication rules to manage network traffic.

Many of the server's administrative features are available to end users, allowing them to create, manage and moderate discussion groups. Users can also create virtual discussion groups, which automatically populate with messages from other groups based on keyword searches defined by users.

"Anything on an internal network where you can take basic administrative procedures and put them at the lowest level possible is helpful," said beta-tester Ross Skinner, manager of IS infrastructure at Del Webb Corp. in Phoenix.

The server supports several forms of security, including password and domain-based security and X.509 digital certificates, for authentication between servers and clients.

Skinner said his company had evaluated proprietary groupware but instead chose to deploy software based on Internet standards.

"I can foresee [Collabra Server] as a product we'll be using," Skinner said. "[Microsoft Corp.'s] Exchange had a lot of replication and management problems. Notes is better, but [Collabra Server] is more open to what I believe the standard will be, which is [Hypertext Markup Language] and the Internet."

ANOTHER ROUTE

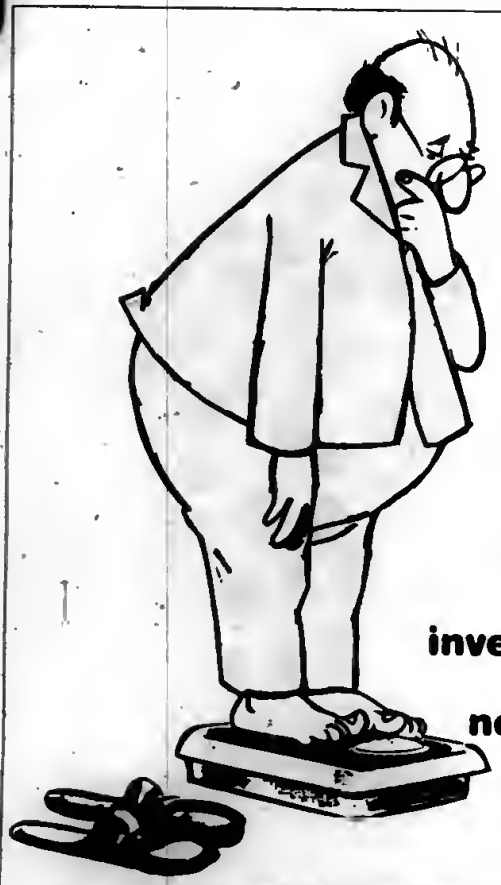
Heather Copeland, Internet development coordinator at Pacific Enterprises in Los Angeles, reported similar frustrations with proprietary groupware. "Notes was way too expensive to spread out across the company, and it's just way too complicated," she said.

Rather than buy a shrink-wrapped product based on Internet standards, Pacific Enterprises spent $60,000 to build its own Internet standards-based conferencing application. The application, called PE Exchange, lets end users create their own discussion groups and assign access privileges much like Collabra.

"If Collabra does everything that PE Exchange does, we might switch just because we're not a software company," Copeland said.

But Copeland said she couldn't think of features her development team hadn't been able to deliver.

"I really don't know what more I would look for," she said. "[PE Exchange] is self-maintaining, self-cleaning."



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EMC boosts performance of disk arrays, storage products

By Tim Ouellette

EMC CORP. this week will announce an across-the-board upgrade of its Symmetrix disk storage systems.

The rollout will beef up performance of EMC's open systems disk products, which analysts said has been lacking. And it paves the way for a slew of storage software products that are expected from EMC this year.

NEW SYMMETRIX STORAGE SYSTEMS

Models	Features	Pricing
3330, 5330*	16 channels 32 3½-in. 9G-byte drives 289G-byte capacity	$625,000 (3330) $682,000 (S330)
3430, 5430	16 to 24 channels 96 3½-in. 9G-byte drives 868G-byte capacity	$1.5M (3430) $1.6M (5430)
3700, 5700	32 channels 128 5¼-in. 23G-byte drives 2.9T-byte capacity	$3.2M (3700) $3.4M (5700)

*5000 series is for mainframes; 3000 series is for open systems

The new Symmetrix models include three open systems storage disk arrays (3330, 3430 and 3700) and three mainframe disk subsystems (5330, 5430 and 5700). They provide the latest high-density disk drives and increase the system bus bandwidth from 200M byte/sec. to 500M byte/sec. (see chart).

Users feeling the pressure of endless storage requirements and larger application loads said they are ready for the new systems.

"We already have the system ordered," said Phil Orton, director of centralized operations at Entergy Corp. in New Orleans. "We will migrate all our mainframe [direct-access storage devices] to the new 5700."

THE BENEFITS

Mainframe storage customers get a huge boost with EMC's announcement, but users of the company's open systems or mixed-platform products will reap the most benefit, said Thomas Lahive, an analyst at International Data Corp. in Framingham, Mass.

EMC's use of cache — online storage that saves time by avoiding the need to access the disk drive each time — in its Symmetrix line has traditionally helped mainframe products but hindered open systems performance to a degree. That is because mainframe data comes in consistently sized, predictable chunks that are easily cached. But open systems data requests come in all sizes and types, which the cache can't handle as easily without more speed.

By boosting the bus backbone speed, EMC addressed the problem, Lahive said.

EMC needed to improve performance because strong offerings from IBM, Hewlett-Packard Co. and Digital Equipment Corp are making the open systems storage market more competitive. And a new direct competitor has entered the market.

Sun Microsystems, Inc. this week will announce disk arrays that can be used with other Unix servers; Sun previously sold storage systems only for its own servers (see story, page 1). And Sun's line costs less than EMC's.

But EMC also is bent on combining its hardware improvements with a host of applications that let users fine-tune their storage strategy. In October, users got data-transfer, disaster recovery and specialized backup software offerings.

"There is so much application capability built in to Symmetrix now, it is a major differentiator for us," Orton said.

For example, EMC's ESP software lets mainframe storage products such as Orton's 5700 host both mainframe and open systems data.

The systems, which will ship within 30 days, can run all EMC software. EMC officials said upcoming software releases for information sharing, high availability and systems management also necessitated the hardware improvements.

Get reacquainted with RAID

The RAID Advisory Board, an industry group of vendors, analysts and users, has adopted new RAID classifications. The St. Peter, Minn.-based group said the previous RAID 1-5 ratings no longer communicate adequate information to customers because each vendor has its own definition of the ratings. The new scheme includes these three categories: Failure-resistant data systems protect against loss of a single component or disk failure; failure-tolerant disk systems protect against environmental failures; disaster-tolerant disk systems must be divided into two or more zones to protect against data loss and must protect against power outages, cooling systems failures and failures to parts of the host or storage system. — Tim Ouellette

Sun server

CONTINUED FROM PAGE 1

port for its enterprise storage products beyond Solaris and UltraSPARC platforms. The move gives Sun customers mainframe-like storage capacity that until now was available only from EMC Corp., IBM and Hewlett-Packard Co.

Sun's Ultra Enterprise 10000 server

Processors: 16 to 64 250-MHz UltraSPARCs

Memory: Up to 64G bytes

I/O slots: Up to 64

Disk space: More than 20T bytes

Bandwidth: 6.4G bytes I/O

With average system prices starting at $1 million, the Solaris servers are aimed at high-end data center applications, including online transaction processing, decision support and data warehousing. "It is going to give Unix users a scalability that was not available before," said James Garden, an analyst at Technology Business Research, Inc. in Hampton, N.H.

Sabre Decision Technologies in Dallas will receive the first Enterprise 10000 — a 32-processor system that the company will use to run a new yield management optimization application for American Airlines.

Richard Ratliff, vice president of Sabre, said, "If we get the kind of performance we are expecting out if it, we might be able to solve even more complicated problems." The server is expected to advance Sun's drive into the top server echelons, in which IBM and HP now dominate.

"It builds on their push into the commercial enterprise computing space," said Jean S. Bozman, an analyst at International Data Corp. in Mountain View, Calif.

Sun's new servers — previously code-named StarFire — include features developed by Cray Research, Inc.'s SPARC-based server unit, which Sun purchased last year. The Enterprise 10000 will let users partition one server into multiple servers within the same enclosure. Sun is using Cray's Gigaplane-XB interconnect technology for systems scalability.

Sun will also offer complete hardware redundancy, hot-swappable system boards and a network-based system console for online maintenance and remote diagnostics.

On the storage side, Sun next month will enter the open systems disk storage market with its RSM Array 2000. Included in the announcement is a 2T-byte backup tape library product and Java-based storage management software.

Baan embeds Informix database

By Randy Weston

CLIENT/SERVER AND database vendors are taking a page from the IBM AS/400 playbook by offering all-in-one application and database packages to customers.

The Baan Co. is embedding Informix Software, Inc.'s Online Workgroup Server (WGS) and Online Dynamic Server (ODS) in the Baan IV enterprise applications package, *Computerworld* has learned. The deal, to be announced next month, makes Informix the default database for Baan IV customers in a Unix environment.

"This is equivalent to buying the self-contained IBM AS/400. The idea is the database and applications are all going to look like one. The selling point for AS/400 has been that everything is included," said Bruce Richardson, an analyst at Advanced Manufacturing Research, Inc. in Boston.

Although the WGS server will be free, Baan is charging an upgrade fee for firms that need the ODS (see chart). Baan IV with ODS is recommended for companies with 300 or more users. For companies with a small number of users, analysts said Baan IV with WGS will be a solid out-of-the-box package of client/server products.

Investing in the Baan/Informix package gives users some clout, said Frank D'Angelo, vice president of information systems at Diebold, Inc. in Canton, Ohio. "You have economic leverage in many cases, and with reputations on the line with a couple of significant vendors, it's an incentive for them to make these products work well together," D'Angelo said.

BAAN BARGAINS

Pricing breakdown of Baan IV apps bundled with Informix database server

	Separate price	Bundled price
Baan IV	$600,000 for 100 users	$600,000 for 100 users
WGS*	$295 per seat	
Baan IV	$600,000 for 100 users	$600,000 for 100 users, plus $400 upgrade per seat
ODS*	$1,500 per seat	

* Informix database server

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Apple strategy not quite ripe

▸ Amelio vague on details of future operating systems

By Lisa Picarille
SAN FRANCISCO

THE IMPACT OF Apple Computer, Inc.'s recent $400 million acquisition of Next Software, Inc. on its future operating system strategy was uppermost in the minds of users last week as they sat patiently through Apple Chairman and CEO Gilbert F. Amelio's nearly three-hour address at Macworld Expo here.

"I just hope they preserve the interface."

– JON RASMUSSEN, KUHN & WITTENBORN ADVERTISING

But all the audience heard was a vague outline of Apple's long-term operating system plan.

"It sounds like they didn't know exactly how all this will play out, and they didn't give enough details," said Neil Neveras, publications manager at The Wharton School of the University of Pennsylvania in Philadelphia. "But it's still very exciting."

"I was disappointed at the lack of details," said Joyce Croker, assistant systems editor at the *Los Angeles Times*, which has 650 Macintoshes and 3,000 Pentium-based PCs. "It was bizarre. I think they are bedging."

Amelio's plao hinges on having two operating systems. He said Apple will continue to upgrade the Mac OS every six months. It also will meld technologies originally intended for Apple's oow-defunct Copland Mac OS and Next's OpenStep applicatioo programming interface into a next-generation operating system called Rhapsody.

Due next year, Rhapsody is expected to maintain compatibility with 85% of the current Macintosh applications. The remaining 15%, the number of programs that are estimated to make calls directly to the hardware, will have to be rewritten.

User reaction to Apple's sketchy plan was mixed.

"I invite the opportunity to have a modern [operating system] with pre-emptive multitasking, protected memory and other modern features. I just hope they preserve the interface," said Jon Rasmussen, systems manager at Kuhn & Witteoborn Advertising in Kansas City, Mo., which has more than 65 Macintoshes.

"I was disappointed at the lack of details [in Amelio's address]."

– JOYCE CROKER, LOS ANGELES TIMES

Despite the lack of details and the long wait before Apple implements its dual operating system strategy, some corporate Macintosb users said they are willing to wait.

"I'm still willing to give them a chance," said Russ Chapman, director of information solutions at Jack Morton Productions, Inc., a training company in Boston that has more than 200 Macintoshes. "We have a big capital investment in equipment. Also, it would be a large and costly undertaking to retrain all our users on another platform."

But even Apple co-founder Steve Jobs — back in the Apple fold as an adviser now that his company, Next, has been acquired — acknowledged that Apple faces tough challenges and that users won't wait forever.

"What we want to try to do is provide relevant, compelling solutions that customers can only get from Apple," Jobs said. "If we can't figure out how to do that, then I think there are a lot of other options for people to buy their computers from."

Apple stumbles on road to profits

By Lisa Picarille
SAN FRANCISCO

MACWORLD EXPO kicked off Phase II of Apple Computer, Inc.'s three-year turnaround plan.

At a briefing last week, Executive Vice President Marco Landi said Apple's goal for this year is to regain profitability. He also showed off Apple's spring line of computers, outlined a new marketing campaign and articulated Apple's renewed commitment to core customers.

This second phase aims to revive Apple from its spate of financial woes. This year will be dedicated to achieving sustainable growth, officials said.

SWEEPING UP

In the housecleaning phase, Apple laid off 1,500 workers, implemented a companywide restructuring, put in place its executive management team, reduced bloated inventory levels, cut operating costs and increased gross margins.

But none of those things has put Apple back in the black — which is the goal for this year.

Chairman and CEO Gilbert F. Amelio predicted that Apple would show a profit by spring. Just last week, the company acknowledged that for the quarter ended Dec. 31 — historically Apple's best quarter — the Cupertino, Calif., computer maker was likely to post a $150 millioo loss — more than 10 times analysts' expectations (see story, page 32).

As a result, Wall Street analysts predict that Apple will lose money in the quarter ending in March. That means it would be more than half way into fiscal 1997 without seeing a profit.

To regain financial stability, Apple is refocusing on its core markets — education, mobile professionals and multimedia users. Although Landi said at November's Comdex/Fall '96 show in Las Vegas that business users were Apple's top focus, he said last week that grades K-12, where Apple has a 63% market share, is Apple's No. 1 priority.

To further stabilize its installed base, Apple plans to launch a spring line of computers. Landi said the company plans to introduce a Power Macintosh using a 533-MHz PowerPC chip from San Jose, Calif.-based Exponential Technology, Inc.

Apple also plans a new Internet server, a 20th-anniversary Macintosh, a personal photo lab machine aod a PowerBook that would be the world's fastest notebook.

APPLE ENTERS PHASE II

1996 – Phase I: Clean house

1997 – Phase II: Regain profitability

- **Focus on core markets – education, multimedia and mobile workers**
- **Deliver spring line of new computers:**
  - **A system based on Exponential's 533-MHz PowerPC chip**
  - **New PowerBooks**
  - **A new Internet server**
  - **A personal imaging and photo system**

1998 – Phase II: Achieve sustainable growth

Microsoft unveils Explorer for Mac, but loyal Navigator users stay put

By Justin Hibbard

AT MACWORLD EXPO last week, Microsoft Corp. unveiled the final version of Internet Explorer 3.0 for Macintosh. It gives Macintosb users the first free browser that matches nearly all the features in Netscape Communications Corp.'s $49 Navigator 3.0 browser.

But Macintosh shops that have standardized on Navigator said Microsoft's browser offers a bit too little, a bjt too late.

Internet Explorer 3.0 for the Macintosh features Microsoft's Java Virtual Machine, its Just-in-Time Java Compiler and support for Macintosh-based ActiveX components.

The browser also comes with a personal World Wide Web server, an updated version of Internet News and Mail and a proxy tunneling feature for assigning proxy users access to secure servers.

Owen O'Neil, director of online services at Dataway Design, Inc. io San Francisco, said the personal Web server would be useful to employees wbo don't have "write" privileges on intranet Web servers but want to share files within a small workgroup.

O'Neil was less impressed with the new version of Internet News and Mail, which now supports multiple users but still lacks mail filters. Users can set up multiple in-boxes, each with a different electronic-mail address. But the in-boxes have no filters that automatically sort mail into different folders.

"One doesn't replace the other," O'Neil said. "You still need filters. With support for multiple users, you can only filter out predictable things."

LOYAL USERS

Regardless of the browser's features, most information systems managers at Macintosh shops said they have been using Navigator without any problems for so long that there is no incentive to switch.

"There's a lot of loyalty toward Netscape now from Mac users because they were our friends when we needed them," said George Rorick, director of graphics services at the Knight-Ridder/Tribune Graphics Network in Washington.

Steven Doren, MIS senior support manager at TBWA Chiat/Day, an advertising agency in Los Angeles, also cited a long history with Netscape as the reason his company will stick with Navigator.

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POSTSCRIPT

Technology drives car rental mergers

By Thomas Hoffman

REPUBLIC INDUSTRIES, Inc.'s plans to acquire National Car Rental System, Inc. for $600 million in stock, announced last week, should make a good technological fit with Republic's recent Alamo Rent-A-Car, Inc. purchase.

After posting $150 million in losses in 1995 (the last year for which figures were available), the $14 billion car rental industry is forcing itself to buoy profit margins by improving how its fleet of cars is most profitably used. To do that, industry players are investing heavily in technology to help them manage their assets more effectively.

Officials at Republic, National and Alamo declined to comment, but industry watchers said they expect Alamo and National to meld their best-of-breed systems.

Alamo, a leader in leisure rentals, is known for its strong point-of-sale and transaction systems, whereas National, known for its presence in the commercial business travel segment, has solid yield-management systems.

National Car Rental's sophisticated yield management system is expected to help sister company Alamo improve its inventory management, analysts said.

"You've got 1.5 million [rental cars] traveling the nation's highways in the hands of strangers, and the ability to control that asset is an overwhelming and daunting task," said Neil Abrams, president of Neil Abrams Associates, an auto rental management consulting firm in Purchase, N.Y.

COMING TOGETHER

Car rental companies "have been floundering," said Robert Langsfeld, president of Langsfeld Fazio & Associates, a travel management consultancy in Incline Village, Nev. Republic's plans to acquire National Car Rental, the third major sale in the past four months, reflects how car rental companies "can achieve economies of scale by bringing together a consolidated information technology solution," Langsfeld said.

Late last year, HFS, Inc. purchased Avis, Inc. and its Wizcom technology group for $800 million. Last week, rumors began to spread that Ford Motor Co. would sell Budget Rent a Car Corp. to a Florida-based group of Budget licensees.

HFS' acquisition of Garden City, N.Y.-based Avis makes sense because HFS would be able to leverage Avis' reservations and sales and marketing systems for hotels, such as Days Inn, Howard Johnson and Ramada Inn, Abrams said.

User group makes SQL choice

THE 160-MEMBER Great Lakes SQL Server Users Group in Chicago is dropping all its programs related to Sybase, Inc.'s SQL Server and focusing exclusively on Microsoft Corp.'s version of the database.

Formed in 1991, the Great Lakes group had balanced meetings between the two products, which were virtually identical when Sybase and Microsoft cooperated on development. But Andrew Zanevsky, the group's president, said it decided to ax Sybase SQL Server because of a shift in membership toward Microsoft, coupled with increasing differences in the databases.

As of the middle of last year, 75% of the group's members were using Microsoft SQL Server, and attendance at Sybase-oriented meetings had dwindled, Zanevsky said.

NARROW FOCUS

Membership will likely drop at first, Zanevsky conceded, but he said he hopes the narrower focus will make the group more appealing to Microsoft users "who weren't interested at all in Sybase topics."

The Great Lakes group operates independently of Microsoft and Sybase. It has members from about 70 companies in Illinois, Wisconsin and Indiana.

Sybase declined to comment on the matter.

—Craig Stedman

PC warranty changes

CONTINUED FROM PAGE 1

Internet forums are also crawling with complaints: Users are griping about everything from pricey technical support, to machines that never worked, to machines that come back from the repair shop still not working.

For example, a Compaq Computer Corp. source confirmed the company requires a credit-card number from users before it will provide technical assistance. The charge isn't posted once the company confirms the customer is still under warranty.

Compaq points out that other vendors also charge for this type of service.

"I know that many vendors are planning to eradicate or reduce warranties as a way to cut costs," said Andrew Seybold, a consultant and editor of "Outlook on Communication and Computing," a newsletter in Boulder Creek, Calif.

"In a commodity market, margins are something that suffer. And this is a way to make your margins," he said.

"Users are going to have to accept the fact that they are going to have to start paying for technical services, that it will no longer be bundled in. ... Of course, the quality of support will have to go up if customers are paying for it," said Elena Christopher, an analyst at Dataquest in Westboro, Mass.

She said that in 1994, vendors spent an average of 3.5% of total product revenue, or about $43.5 million, providing service and support. Vendors spent 2.7% of revenue on PC servers, 3.5% on desktop PCs and 4.5% on notebook support.

BETTER IN THE LONG RUN

Users may see the warranty takebacks as a negative trend, but Christopher predicts it will mean better service and cheaper products in the long run.

"I know that users will see this trend as a signal that quality is going down with products, but the vendors argue that plugging revenue leaks like generous warranties will keep prices down, not quality," Christopher said.

Doug Moran, an information systems analyst at CRSS Constructors, Inc. in Denver, said he has been disappointed with desktops from Palo Alto, Calif.-based HP. He cited difficulties in obtaining replacement and upgrade parts. He also said machines he used to get back within three days from Compaq now take much longer to retrieve.

"Now it takes a week to get the [shipping] box from them to send it back to them in," Moran said.

In the high end of the notebook arena, vendors are offering three-year or longer warranties as a way to lure customers, said Gerry Purdy, a consultant and editor of "Mobile Letter," a newsletter in Mountain View, Calif. "But at the low end, the margins are so thin that they are cutting the warranties," Purdy said.

Steve Wittner, a network manager at Centex Construction Group, Inc. in Dallas, said he has noticed vendors are giving users reduced warranties on new systems.

"It wasn't like they made an announcement. It was just that all of a sudden as I shopped around, I began to notice that the warranties were down from three years to one year with many of the vendors," he said.

The reduced warranties are a bigger deal for laptops than for desktops, Wittner said.

"With a desktop, I can open it and replace a component very easily," he said. "But with laptops ... forget it. Each one is different and it is much more complicated [to fix them]."

Change in the air

Officials at PC makers who would talk about their warranty policies last week said they are sticking with current policies but admitted they are considering changes.

— Hewlett-Packard said it hasn't changed its standard warranty policy on machines and is surprised by the accusations of difficulties in obtaining parts for add-ons and upgrades.

Mike Borg, commercial desktop marketing director at HP, said the company is considering revamping its warranties to make them more "flexible."

Borg said HP already offers a premium menu of warranty and service options for a fee added on to the cost of the machine. He said future options may follow this path. He denied that HP's standard warranty for commercial desktops has changed.

— Dell Computer said it is trying to come up with warranties that better fit user needs. For now, it is sticking with a three-year standard warranty — with one year of on-site service and the next two years being a parts-only delivery service — but changes may be on the horizon.

"We're finding out what our costs are and evaluating what is needed," said John M. Reynolds, services marketing manager at Dell.

— IBM offers a three-year warranty on its PCs but also has services designed to help users help themselves, including Online Housecall, a remote diagnostic support tool and online support via various online services.

The company provides a 900 number at $2.99 per minute for help with questions on out-of-warranty hardware and a $35 per-incident service for more in-depth problems.

— April Jacobs and Mindy Blodgett

Users see negatives in J++

CONTINUED FROM PAGE 1

"We can't use Microsoft's J++ because we could get some Java code that's not pure Java," said Larry Hagerty, senior systems engineer at GTE Data Services in Tampa, Fla. "The whole beauty of Java is the cross-platform standard. If companies keep putting their own extensions on it, what will be the point? We like using [Microsoft] tools, but we won't be able to if they keep this up."

Interviews with nine corporate developers last week found that six were casting Visual J++ aside or refusing even to consider using it as they start Java development.

Another developer said he was nervous about using the Microsoft product but hasn't had enough time to find another tool. Two other developers said they were committed to the Windows platform and expressed no concerns.

Hagerty beta-tested Visual J++ last summer and adopted the tool. But he stopped using it about six weeks ago and is considering Symantec's Visual Cafe Java product. Using Microsoft's Visual J++ added the danger that one of his many developers would use an ActiveX extension or hook up to a Windows application programming interface, wrecking the application's cross-platform capabilities, he explained.

> If companies keep putting their own extensions on [Java] what will be the point?
> – Larry Hagerty
> GTE Data Services

But those extensions and hooks are there specifically for developers who are focusing on Windows applications, said Greg DeMichillie, lead program manager for Visual J++ at Microsoft. Developers can choose to use them or not, he said.

"This is not a slippery slope where once you start using J++, you're automatically Windows-specific," DeMichillie said. "I want customers interested in the cross-platform capabilities of Java to use J++. For those interested in the specific Windows platform, here's some extra functions they can use."

NOT BUYING IT

That reasoning didn't hold much appeal for David Bowser, a distributed information architect at Cummins Engine Co. in Columbus, Ind. He said he "won't even consider using J++" now that he has evaluated it. He is trying out Sun's Java WorkShop instead.

"I know what Microsoft's goals are, and they're not to help me run cross-platform," Bowser said.

Java-focused newsgroups on the Internet have been riddled with developers' complaints about Microsoft binding the tool's cross-platform capabilities.

Microsoft officials protest that they are getting a raw deal on the Internet's electronic rumor mill.

Paul Mahowald, vice president of retail development at Blockbuster Entertainment Corp. in Fort Lauderdale, Fla., said he plans to try out Visual J++ despite the flurry of complaints.

"Windows is the dominant platform," he said. "I'm not going to choose how we write the code because a few people in the company have a Mac."

Yet for Mark Erdich, senior software engineer at Alldata Corp. in Elk Grove, Calif., Microsoft's single-platform focus has given him pause.

"We have Unix and Windows here," said Erdich, who still uses J++ but wants to try out Visual Cafe and Java WorkShop. "If I used an ActiveX control, that would kill the Unix end. It would eliminate half the benefit of going to Java in the first place."

Staff writer Randy Weston contributed to this report.

OpenDoc Windows version spells decision time for IBM development software. Page 45

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Ameritech targets long-distance business

By Kim Girard

MICHIGAN BUSINESSES may soon have another long-distance carrier in Ameritech Corp., the Baby Bell blazing the trail to offer long-distance service under telecommunications reform.

Ameritech, which provides local service in Michigan and four other states, said it has fulfilled a 14-point checklist and wants to provide long-distance service in Michigan by spring. The Federal Communications Commission must now decide whether Chicago-based Ameritech has met the requirements. Ameritech, with US West, Inc. and BellSouth Corp., is one of the three Baby Bells that have yet to merge or be acquired.

"We're working with Ameritech right now to see what they'll be doing," said Kristine Beach, a facilities secretary at Bay City, Mich.-based Mutual Savings Bank, which has 22 branches in the state. Beach said she expects competition to reduce her average long-distance rate of 10 cents per minute.

The bank uses Ameritech for local service and AT&T Corp. for long-distance and T1 line service.

Analysts said long-distance competition from the regional Bell operating companies — plus second-tier providers such as Brooks Fiber Communications, MFS Communications, Inc. and Teleport Communications Group — should benefit small to midsize businesses.

Those smaller companies in many cases aren't able to get the lower prices that larger companies can demand in big contracts.

"For Fortune 1,000 organizations, the impact will not be great," said Bryan Van Dussen, a telecommunications analyst at The Yankee Group in Boston.

But smaller companies should expect lower prices and expanded services, he said. A single contact point for integrated services is also a draw for business customers, Van Dussen said.

But Vern Weber, president of Standard Electric in Saginaw, Mich., which has 17 sites in the state, said he doesn't believe competition from one additional company will make much difference in the company's $400,000 annual local and long-distance bill. The company currently uses Sprint Corp. for long-distance service.

"We look at [other companies' rates] all the time," Weber said. "I can't keep track of it."

It may take some time before companies are tracking Ameritech's long-distance rates.

The Competitive Telecommunications Association, a group of 200 carriers and telecommunications suppliers, contends Ameritech has failed to meet the 14 requirements established by the FCC. AT&T and MCI Communications Corp. called Ameritech's proposal "premature."

Jeff Kagan, president of Kagan Telecom Associates in Atlanta, said he doesn't expect Ameritech to get FCC approval this time around.

"Ameritech will be offering long-distance by midyear," Kagan predicted. "They'll get it before all the Bells. They'll blaze the trail. This year, you'll see long distance offered by Baby Bells in parts of the region — and in 1998, all over the country."

Meanwhile, long-distance companies are plotting to invade the $90 billion local calling market.

"Right now, they're all screaming over who gets what first, and in three years it won't matter," Kagan said.

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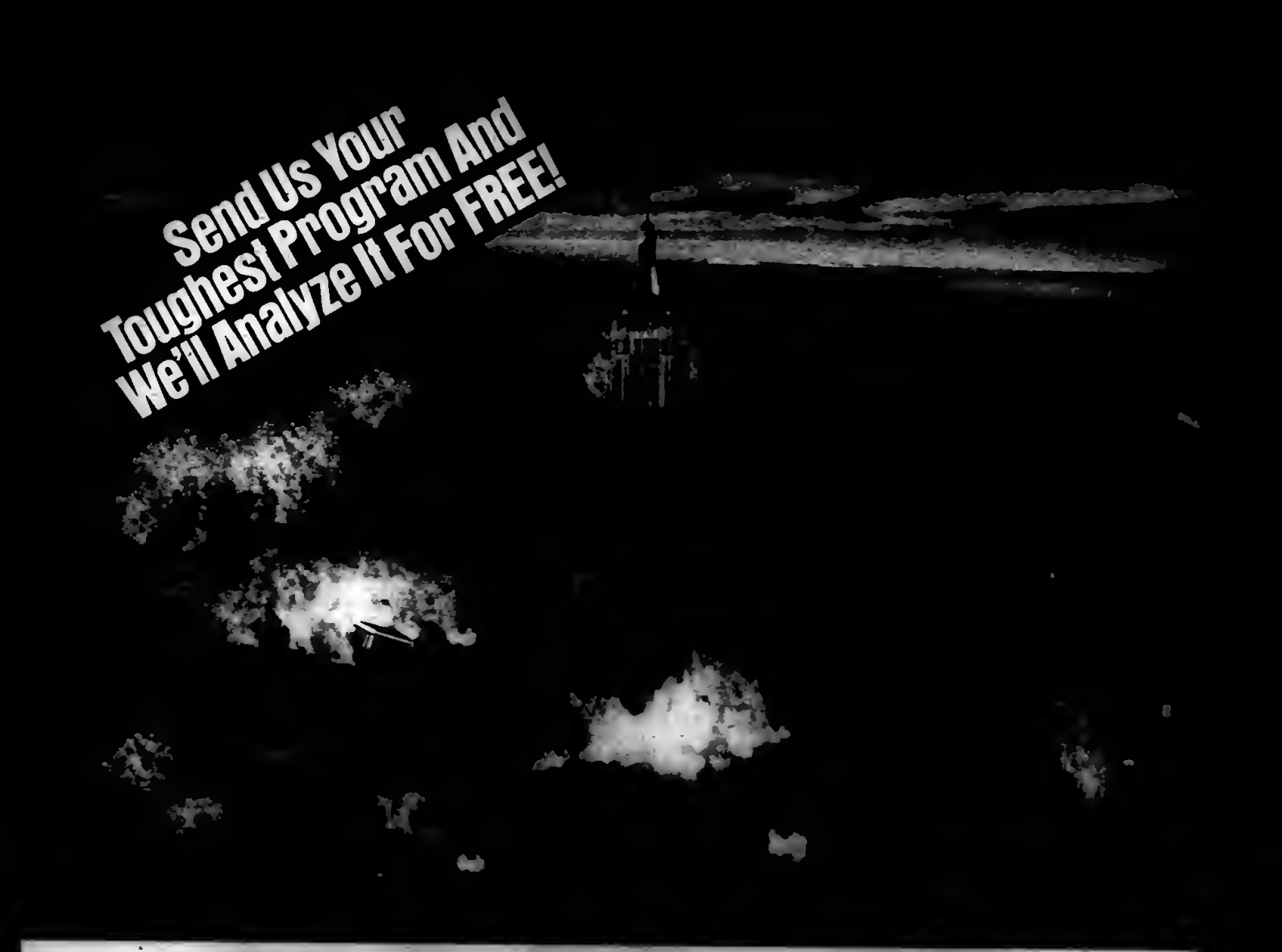

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Bill seeks to ban 'net taxes

By Gary H. Anthes
WASHINGTON

SEN. RON WYDEN (D-Ore.) and Rep. Chris Cox (R-Calif.) said last week they will introduce legislation next month "to stop new cybertaxes in their tracks."

The legislation would attempt to choke off a growing trend by state and local governments to wring tax dollars out of Internet commerce.

"What people want to avoid are cases where [tax authorities] see bits flying through a router in their jurisdiction and start claiming they can tax it," said James Love, director of the Consumer Project on Technology in Washington.

"I would take this as a serious thing," Love said of the proposed legislation. "Wyden and Cox are plugged in to the Internet community, and they have a lot of support from people involved in Internet commerce."

The Tennessee Department of Revenue recently issued a notice about sales taxes on Internet services. A spokeswoman said there was "confusion in the industry about collecting the taxes, and we're trying to get everyone in compliance."

Tennessee levies a 6% state sales tax on Internet services, including initial sign-up fees for Internet access. It also collects a 1.5% local sales tax for interstate Internet services. Information services, such as a news or database service, however, aren't taxed.

The Wyden/Cox bill would block the imposition of any new Internet taxes, such as the Tennessee taxes. It would also call on the White House to develop a comprehensive plan to address electronic commerce tax issues.

The Clinton administration has already begun doing that. In November, the U.S. Department of the Treasury said new communications technologies, including the Internet, shouldn't be used to justify new federal taxes. No federal "bit tax" or excise tax on electronic commerce is in the works, the department said in a report posted at www.ustreas.gov [CW, Nov. 25].

"What people want to avoid are cases where [tax authorities] see bits flying through a router in their jurisdiction and start claiming they can tax it."

– James Love, Consumer Project on Technology

Although the proposed legislation deals with the 30,000 U.S. taxing authorities, the Treasury Department's report sought public comment on similar issues abroad. "The Internet [has] effectively eliminated national borders," the report said. "As a result, cross-border transactions may run the risk that countries will claim inconsistent taxing jurisdictions and that taxpayers will be subject to quixotic taxation. ... Rules that provide certainty and prevent double taxation are required."

"The absence of cybertax legislation could risk the development of a hodgepodge of overlapping, conflicting and burdensome taxes that will hurt American businesses and consumers," Wyden said. An example of inconsistent taxation is the fact that some states tax software when it is sold electronically, whereas others tax it only when it is sold as a physical product in a store, he said.

In another example of taxation complexity, Wyden said there are several possible points of taxation when software created in Oregon is sold by a California company and downloaded in Florida from a server in Illinois using an online service based in Virginia.

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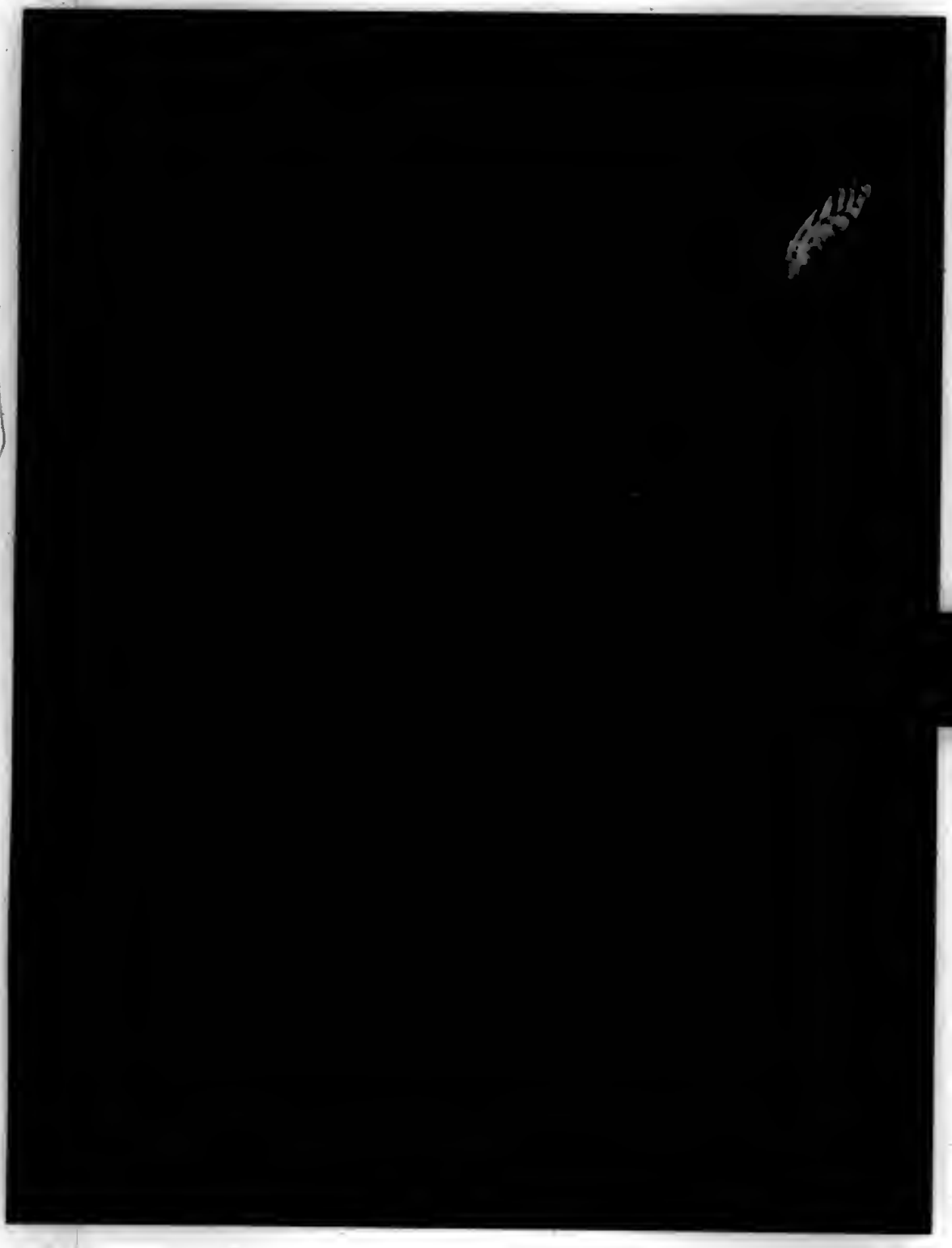

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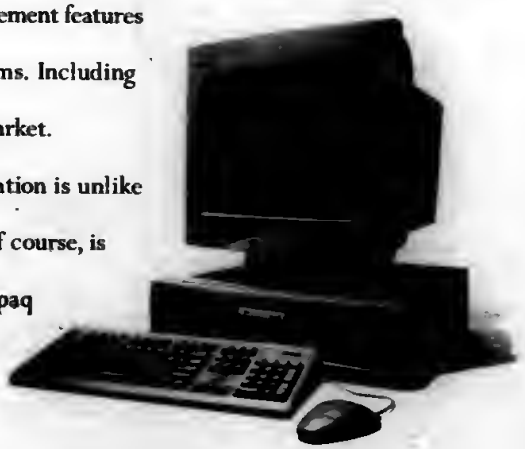

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Has It Changed Your Life Yet?

IS pros discover the ups and downs of working in Japan

By Robert L. Scheier
TOKYO

"IF I CAN make it here, I can make it anywhere."

Sitting in the bar of the Imperial Hotel in Tokyo, Tim Oller can think of no better way to describe life as an information systems professional in Japan.

Even though he is 13 time zones from his own backup technical staff, his customers expect client/server systems to stay up 24 hours a day, seven days a week.

"To think you have to reboot [because of a bug] is unacceptable," said Oller, a 30-year-old systems engineer at Lucent Technologies, Inc. who supports system users at Nippon Telephone and Telegraph CHK (NTT) in Tokyo. "If you can satisfy the Japanese customer, you can probably satisfy any customer."

And you can make good money because IS salaries for Westerners in Tokyo can run 50% or more above comparable positions in the U.S. Just as valuable is the career cachet of working in the fast-growing Pacific Rim, not to mention the sheer adventure of working and living in an exotic culture.

But life in Japan also means 10- to 12-hour days working elbow to elbow in crowded, often smoke-filled offices. You will wear a suit and tie and commute by train almost every day because telecommuting will be tough from the cramped apartment you will share with your family.

Lucent Technologies' Tim Oller: "If you can satisfy the Japanese customer, you can probably satisfy any customer"

LEARNING JAPANESE

If you want a decent life outside of the office, you had better start learning how to speak, if not write, decent Japanese.

Even Americans who have learned Japanese face major culture shock, Oller said. He lived in Japan for two years in the mid-'80s while in the Navy, is married to a Japanese woman and completed the equivalent of two years of full-time Japanese language study in his spare time.

Still, "it's a pretty big change. If somebody's really thinking of coming here, take a real reality check and say, 'How much Japanese do you speak, and how much Japanese do you understand?'" That will be crucial to forming the friendships that keep one going outside of work.

The culture shock can be particularly hard on spouses and children, said Ranelle Royal, a software recruitment consultant at TKO Personnel, Inc. in San Jose, Calif. That's because they find themselves cut off from familiar things such as Western food, shopping malls or even being able to find the right size clothes. Because of the high cost of living in Japan, the only way to save any of the "extra" money you earn is to live like a native, in a small apartment with no car and eating Japanese food.

In fact, if the recruit's spouse and children don't know what they are getting into, that's a red flag for recruiters.

When visiting Japan as a tourist or a businessperson, waitresses bow and smile endlessly and disagreements are delicately phrased. "But as a vendor, you're at a different level. You're a step lower," Oller said. "There's no hesitation about speaking directly to you," demanding a level of service unheard of in the U.S.

Fulfilling those demands usually means working from 9:30 a.m. to 7:30 p.m., and later once or twice a week for late-night conference calls to Lucent headquarters in Murray Hill, N.J.

"I can't say, 'I don't know that'" when a user he supports calls with a problem such as a missing report. "That's not acceptable. You are your company; you have to solve the problem, whether it's something you're familiar with or responsible for. I have to know hardware, I have to know software, I have to know every single software subsystem," Oller said.

You've got to talk the talk

For those Western IS specialists willing to make some sacrifices, job opportunities in Japan are "up 50% over a year ago," said Tony Rodriguez, executive account manager at International Computer Professional Associates, a high-tech recruitment firm that specializes in the Asia-Pacific market.

Although demand for IS "experts" seems to be falling among large Japanese firms, demand is still strong among large U.S. companies building information systems to support their drives into the Japanese market, recruiters said.

One hot area is financial services, where deregulation is opening up opportunities for non-Japanese companies. Rodriguez said systems engineers who can work with traders to develop computerized trading programs can command between $200,000 and $400,000 per year in Tokyo, even with no Japanese language skills.

Another factor driving demand for Westerners is the move away from proprietary systems made by Japanese vendors such as NEC Corp., for which there was plenty of homegrown talent, said Ken Read, general manager at TKO Personnel.

"These days, with the open architectures, we're seeing a lot of demand for American software experts," Read said. "There may be only a handful of similar people in Japan."

Among the skills most in demand are object-oriented development, C++, three-tier client/server development, Windows NT administration and Java, Rodriguez said. Ranelle Royal, a software recruitment consultant at TKO, added Windows 95, Unix, LANs and WANs to the list.

"A number of the very large, vertically integrated Japanese firms like Mitsubishi or Toshiba are launching [Internet service provider] companies," Read said. "They want to hire the top guy and maybe a couple of really fast-shot engineers who will come in and ... launch the company."

To lure such top people away from their American lifestyles, some Japanese companies offer handsome pay and benefits. An IS professional such as a client/server project manager or director of IS operations who earns about $80,000 per year in the San Francisco area could command up to $120,000 in the Tokyo area, Royal said, and could expect another $10,000 to $20,000 per year in housing allowances in some cases. Someone with five years of experience, Japanese language experience and qualifications such as a Certified NetWare Engineer certificate can find jobs in the San Francisco Bay Area that pay $60,000 to $70,000, but the same recruit could make $90,000 to $105,000 in Tokyo. — Robert L. Scheier

Snapshot

Starting salaries for IS professionals in the U.S. will increase by an average 2.3% this year, according to an analysis of more than 1,000 job orders recently released by Robert Half International, one of the country's largest IS placement firms. Starting salaries for specific IS jobs are as follows:

Job title	1996	1997	Percentage change
CIO	$98,000 to $165,000	$102,000 to $168,000	2.7%
IS director	$78,000 to $104,000	$80,000 to $108,000	3.3%
Client/server systems architect	$67,000 to $88,000	$68,000 to $90,000	1.9%
Network architect with Internet expertise	$54,000 to $70,000	$57,500 to $72,000	4.4%
Project manager	$53,000 to $67,250	$54,000 to $69,000	2.3%
Database administrator	$53,000 to $65,000	$54,000 to 67,500	3%
Systems analyst	$45,000 to $55,500	$46,000 to $57,500	3%
Lotus Notes developer	$45,000 to $58,000	$45,000 to $60,000	1.9%
Unix administrator	$40,000 to $57,000	$42,000 to $58,000	3.1%
Systems analyst with Internet expertise	$34,000 to $49,000	$35,000 to $52,500	5.4%
Help desk support technician	$25,000 to $35,000	$25,000 to $36,500	2.5%

Source: Robert Half International Inc., Menlo Park, Calif.

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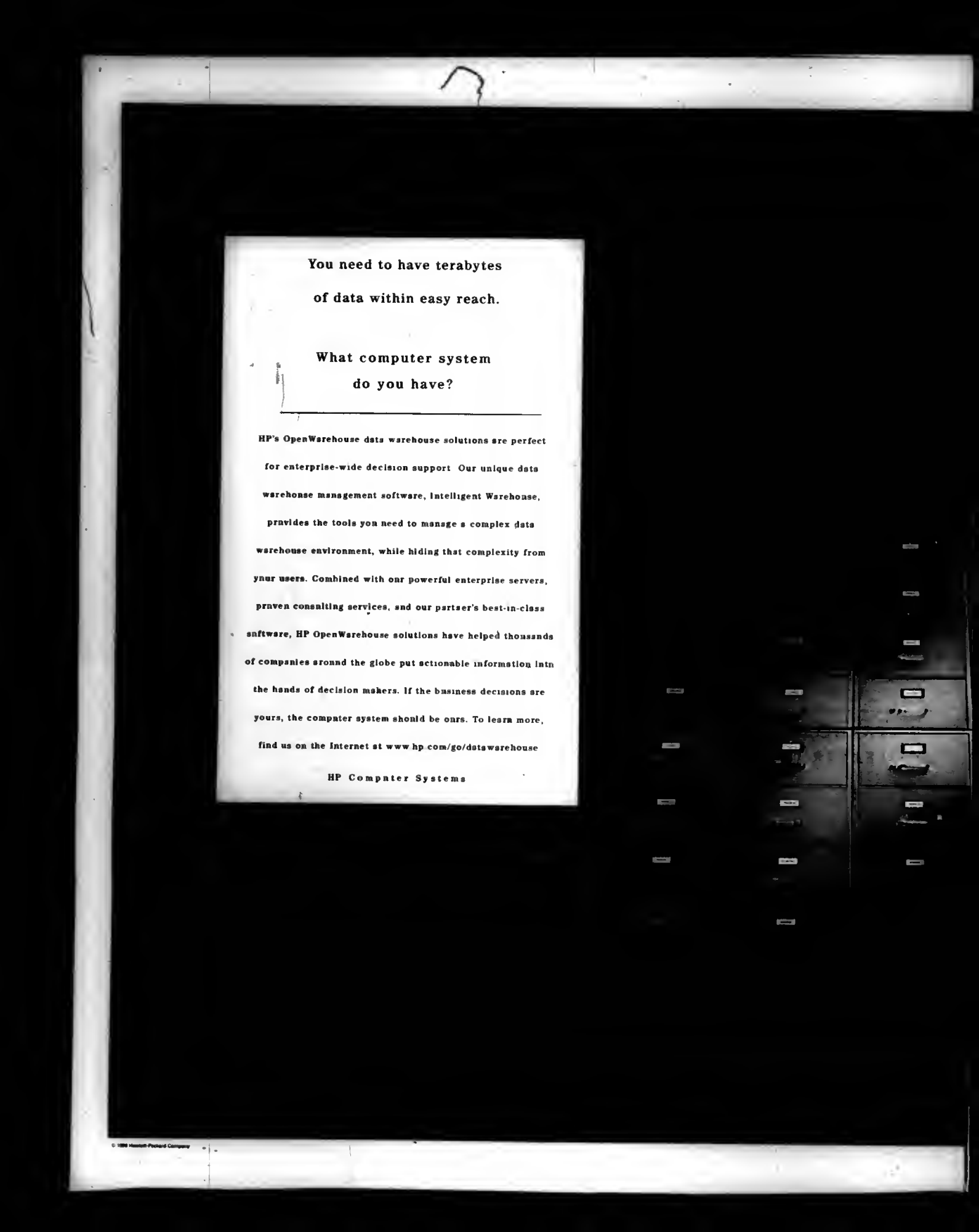
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(c) OS/2 (g) Windows
(d) Unix (h) NeXTstep
App. Development Products ☐ Yes ☐ No
Networking Products ☐ Yes ☐ No
Internet Products ☐ Yes ☐ No

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(c) ☐ Web authoring/development tools

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Networking Products ☐ Yes ☐ No
Internet Products ☐ Yes ☐ No

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OPINION

Handheld hype Handheld devices are hot stuff this year, allegedly.

One consulting firm predicts 650,000 of the suckers will be sold by year's end, and computer retailers anointed personal digital assistants (PDA) as "must-have" items for the recent holiday season.

Well, I'll bet a steady stream of PDAs are now returning to the stores from whence they came. People are figuring out that handheld devices still do very little real work, even after all these years.

Sure, they're cool toys. And the truly geek-ful will undoubtedly keep their models — if only because they want anything with a keyboard just on pure principle. But more practical folks will see that PDAs are still little more than souped-up address books/calculators/calenders. That's fine for the Filofax set, I guess. But for my money, I want something more useful.

Yes, PDAs have more features and work much better than the first generation did a few years back. Some of the high-priced models will, after a degree of futzing, upload or download data from your laptop and/or desktop machine. And some of the really high-priced gizmos ($400 and up) will even send or receive E-mail. (Of course, to do this, you need to go through the proper installation procedure, which usually involves plugging the PDA in to the wall, circling it three times and chanting.)

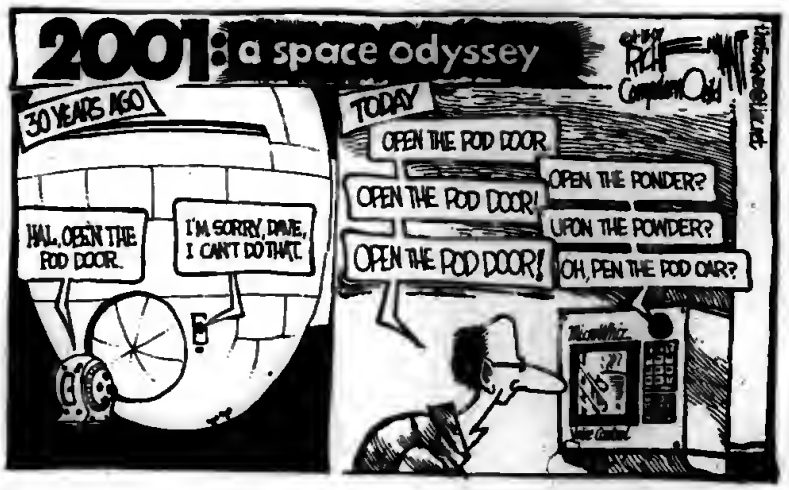
One of the newest PDAs — the Windows CE-based model from Casio ($600) — has the interface we all know (if not love), a version of Word and the ability to surf the Web.

But who cares? I mean, how much word processing do you really want to do on a screen that's roughly the size of the sunglasses Elton John used to wear? And how much surfing can you do while you're squinting to read the teeny-tiny words? And if you have large hands or fingers, have fun trying to hit those PDA keys.

So thanks, but I'll pass. I'll keep schlepping my laptop around. It may be old and heavier than a PDA, but at least I can work on it. Until the battery runs out, that is.

Johanna Ambrosio

Johanna Ambrosio, *Online editor*
Internet: *johanna_ambrosio@cw.com*



LETTERS

Angry at overextended AOL

I WANT TO add myself to the ever-growing list of severely unsatisfied and downright insulted users of America Online. Even several vaunted attempts to contact AOL President Steve Case were met with this E-mail reply: "The mail you sent could not be delivered to: 552 stevecase@aol.com." Gee, why am I not surprised?

AOL has clearly overextended the limits of its resources, both electronic and human. Wait times are no longer measured in minutes, but hours. They employ "tech support" personnel who speak like computer illiterates. One actually thought a 2,400 baud line was faster than a 14.4K line! Maybe not everyone is as vocal as I am, but I suppose if they were, something might actually get done about this sort of thing.

Adam G. Alsop
President
Vanguard International Productions
Palmdale, Calif.

What 'beta' used to mean

MIKE NEAL'S letter ["Buggy betas do a disservice to the software industry," CW, Dec. 9] regarding the great stability of Novell's 4.11 beta release underscores something all too apparent in the industry these days: the loss of the original meaning of "beta."

Apparently, Novell is the only company left that hasn't forgotten what it used to mean: a complete product, including documentation, which will be released as-is if no bugs are found. Development was expected to be confident about the product and to jump on any bugs found. Products could be pulled if serious problems arose.

In these Internet days, "beta" all too often means what pre-alpha used to mean: a developer's cut, with no documentation, missing functions, known serious bugs and often limited interest in fixing serious flaws. I grieve for our industry.

Today's beta is yesterday's pre-alpha

Phil Smith
Herndon, Va.

A lesson on learning curves

I READ HOWARD MILLMAN'S "IBM has Visual Basic in its sights," [CW, Dec. 9] with interest until he offered this suggestion: "To help you flatten the learning curve . . . "

If something is hard to learn, it probably has a flat learning curve. If something is easy to learn, then it probably has a steep learning curve. In the words of Martha Stewart, this is a good thing. Why would anyone want to flatten a learning curve?

This concept is butchered in the press all too often. Let's get it straight.

Mike Good
Clearwater, Fla.

E-commerce relatively safe

YOUR FRONT PAGE article on Internet transactions ["Cybercash at risk: Money laws lacking," CW, Dec. 23] was misleading and alarmist.

The truth is that consumers can purchase by credit card more securely on the Web than anywhere else. It is safer to enter your credit card on a secure Web page than it is to give it over the telephone to a mail-order clerk. Consumers are protected from credit-card fraud by law when they use the Internet. They can challenge a transaction and receive a credit that is deducted from the merchant's account.

Wake up! Secure Internet transactions are already working. Credit-card entries are encrypted and immediately verified by secure connections to merchant banks. It all happens faster than you can swipe plastic at the checkout. Some vendors on the Web continue to offer prepaid "digital money." They are equivalent to gift certificates and offer consumers no protection. They are also obsolete.

Max Defreitas
Zapware, Inc.
Houston

Editor's reply: *Although our story focused specifically on issues related to new forms of electronic money on the Internet, you raise some good points about the safety of online credit-card transactions. Indeed, judging by online buying habits so far, consumers are more comfortable sending credit-card data over the Internet than they are using the various modes of digital cash we wrote about.*

Computerworld welcomes comments from its readers. Letters shouldn't exceed 200 words and should be addressed to Maryfran Johnson, Executive Editor, Computerworld, PO Box 9171, 500 Old Connecticut Path, Framingham, Mass. 01701. Fax number: (508) 875-8931; Internet: letters@cw.com. Please include an address and phone number for verification.

Three-tier is passe. Here comes Hyper-Tier!

Judith Hurwitz

You're probably feeling pretty good about yourself. You've mastered two-tier client/server computing, and you're on your way to figuring out three-tier client/server. But, in the spirit of the hyperspeed Internet, here comes a new architecture called Hyper-Tier computing.

Don't panic. It isn't a content-free buzzword from some airline magazine. It's actually a very pragmatic way to move your organization into the next century — and build the hybrid intranet/Internet systems known as extranets — without an organizational meltdown.

The concept is straightforward. The essence of Hyper-Tier is establishing a clean separation between the following system layers:

- The access layer, which is the browser or desktop interface.
- The coordination layer, which includes the Web server connected to middleware, security, search engines and directories.
- The resource layer, which includes existing data, application logic, databases and business rules.

In the Hyper-Tier model, logic is modular, browsers rule and flexibility is the No. 1 goal

With Hyper-Tier, you begin by deploying fat or thin clients and a Web server. That gives everyone a standard user interface and a hyperlinked connection to corporate information systems. Businesspeople find it easier to access data — from price changes to customer databases — without programmer intervention. Users feel more productive and satisfied than they have in years.

But you don't stand still while users surf the Web and corporate systems. Now the hard work begins. A task force of business professionals and database administrators will need to reconcile the hodgepodge of inconsistent data definitions that have sprouted throughout the organization. You need standard definitions for "customer" and "price."

Why go through this painstaking exercise? At a Comdex session, I asked an audience of 400 how many had Web access to corporate data sources. At least 200 raised their hands. Then I asked whether users querying multiple data sources got conflicting answers. Most of the 200 raised their hands again.

The Hyper-Tier concept also requires that you analyze your application logic. You can keep the logic embedded in complex mainframe applications and client/server systems, but you'll want to encapsulate that logic as a software module. Applications are built by teams of developers who get bonuses based on how little code they write and their level of reuse. Meanwhile, begin installing lightweight middleware to handle transactions, directory services and security.

The beauty of this approach is that you don't have to throw out all your systems and start from scratch. You start by offering users some instant gratification with Web browsers while you work to fix what was broken and modularize what wasn't.

Why do I call this Hyper-Tier? Because it's foolish to think we'll have a set number of tiers in our computing environments.

If we assume that we'll always have some valuable legacy systems and that users will want to navigate among various systems with hyperlinking, then rigid two- and three-tier models with tightly knit interfaces won't work. In the Hyper-Tier model, there are no hard-coded interfaces, and flexibility is goal No. 1.

Hyper-Tier isn't a magic bullet. It won't make all your problems disappear overnight. But at least with Hyper-Tier computing, change is actually encouraged.

Hurwitz is president of Newton, Mass.-based Hurwitz Group, Inc., which has trademarked the term Hyper-Tier. Her Internet address is jhurwitz@hurwitz.com.

New IS role: Bypassing the middleman

Michael Schrage

There's no shortage of whining, moaning and cynicism when IS folks complain about their companies. So when an IS person cracks a serious joke — one that's actually funny — about his internal clients, my ears perk up. You ignore serious jokes at your peril.

I had casually suggested to an IS director at a really big global financial services company that it might be a good idea if the company's brokers standardized on a contact manager such as Act. The company could get two benefits for the price of one: The brokers would have a helpful tool to manage client relations, and the company would be able to monitor (via the server) how frequently the brokers managed their client contacts.

The IS director looked at me, smirked and said, "Our brokers wouldn't use the software well. We should give the contact management software to the clients so that they could use it to manage the relationships with their brokers."

He wasn't quite kidding. What's more, he had a point. You could make a powerful argument that, in the interest of better customer service, the company's IS department might be wiser to give contact management software to the company's clients rather than its brokers.

This begs a fascinating question: As digital technologies diffuse throughout multiple marketplaces, who is the appropriate customer for IS? Internal clients? Or the *real* customers? The rise of intranets — and the prospect of giving outsiders access to them — has given these sorts of questions an immediacy they didn't have even a year ago. Simple extrapolation of ongoing technological and marketing trends will turn these questions from tactical challenges into strategic issues.

To wit, every company that has agents and intermediaries doing sales and support will have to make serious decisions about what role IS will play in either disintermediating the middlemen or adding value to them. Crudely put, does it make more sense to give software to your brokers or your brokers' clients? Your insurance agents or your insurance agents' customers? Your tech support people or the people they support?

It's becoming increasingly easier to imagine IS departments, both centralized and departmental, being asked to design information structures that reduce either the power or the value of various enterprise intermediaries. Or, to put it more positively, it's easier to imagine IS designing information structures that directly add value to customers.

This may be the year IS makes contact with real customers

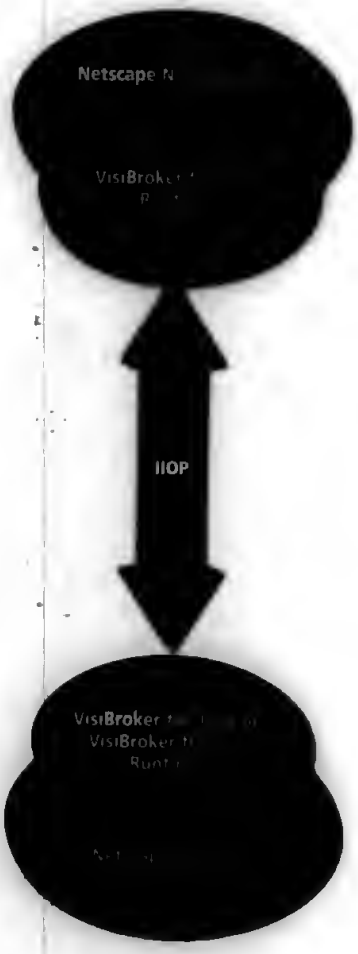
By accident or design, IS seems destined to become involved in the business and politics of corporate disintermediation. What a tasty irony. IS has been buffeted by outsourcing and downsizing and decentralization for the past 15 years. Now IS may be the medium for doing that to the parts of the organization once deemed mission-critical: sales, marketing, operations and support.

Indeed, using extranets and software to augment or bypass the enterprise intermediaries will likely become one of the most important organizational design issues managers will face during the next decade. At the very least, it's going to command a lot more thought and introspection than the year 2000 problem.

That said, you have to wonder whether this crop of IS executives has the business smarts and the political will to become players in this new value-creation game. The serious joke could be on them.

Schrage is a research associate at the MIT Media Lab and author of No More Teams! *His Internet address is schragr@media.mit.edu.*

THE LEADING JAVA ORB



"Netscape To Integrate Visigenic ONE Products Into Netscape ONE Platform" — Netscape Communications July 30, 1996

We've all read the headlines about Netscape and their commitment to providing the most advanced technology for the Web. The story behind the headlines: Netscape is using Visigenic's object request broker technology to enable Netscape ONE to support the Internet Inter-ORB Protocol (IIOP) — the standards-based way your Java applets and distributed application objects will link together to create powerful business applications for the Internet and Intranet. ▼ So why turn to Visigenic? Because nobody knows more about IIOP and ORB technology for the Web. After all, Visigenic, a pioneer in distributed object technology, developed the first Java ORB, and was the first to commit to IIOP. There's more. With VisiBroker for C++ complementing VisiBroker for Java, you can link application objects from both your enterprise and Web servers. ▼ The real news here: develop with VisiBroker today and be ready to take advantage of the VisiBroker runtime that will be part of the upcoming version of the world's most popular Web browser. To contact Visigenic call **1-800-800-0361, 1-415-312-7197**, or e-mail **info@visigenic.com**.

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COMMENTARY

Coping with bandwidth woes

DAVID MOSCHELLA

AS BILL GATES says, if you could choose one thing to help predict the Internet's future, it would be how quickly network bandwidth will improve, just as ever-faster microprocessor speeds drove the PC era, network capacity is the gating factor for many new applications and services.

What's the bandwidth outlook for this year? At first glance, significant progress seems unlikely. Be prepared for yet another round of stories describing how heavily hyped network technologies have thus far failed to deliver: Integrated Services Digital Network, cable modems, cable telephony, video-on-demand, end-to-end Asynchronous Transfer Mode and so on.

But in the absence of breakthroughs, the market will strive to work around today's physical limitations. Indeed, there are at least five ways in which the lack of bandwidth is reshaping the Internet industry.

1. **Private networks.** Intranets and extranets were originally envisioned largely for security purposes. However, private nets have also become the main target market for new services such as videoconferencing, Internet telephony, electronic commerce and networks with guaranteed quality of service.

2. **Service rationing.** The Resource Reservation Protocol (whimsically known as RSVP) will eventually enable the auctioning of Internet bandwidth via privileged services with premium pricing. It could also transform network performance specifications into a standard application feature. But even with the strong support of Cisco, Intel, Microsoft, MCI and others, serious deployment is unlikely before late this year.

3. **Asynchronous broadcasting.** Although the 'net is still inadequate for most real-time audio and video, many useful multimedia applications can be downloaded during off-hours for later viewing. The potential here is virtually unlimited — hence the excitement about "push media" companies such as PointCast, Marimba and BackWeb.

4. **Faster hardware.** Be it modems, Web servers, switches, routers or the underlying network backbone, rapid equipment advances continue. Virtually all the 'net's components at times become significant performance constraints.

5. **Traffic separation.** There's growing recognition of the need to intercept 'net traffic before it clogs central office telephone switches. The real issue is who should pay for the infrastructure upgrades. A controversial compromise may emerge whereby the regional Bell companies reduce long-distance telephone access charges and add Internet access fees.

Unless new technologies come to the rescue, this evolutionary process will have to suffice. But we should all recognize that the lack of bandwidth has already affected the Internet's evolution, and not just technologically.

A successful RSVP rollout will require unprecedented cooperation among router vendors, computer companies and Internet service providers. As standards guru Carl Cargill has noted, the telephone companies have historically agreed upon standards and then competed. Computer vendors generally compete first and let standards emerge over time. As the Internet industry tries to rapidly and simultaneously improve bandwidth and remain interoperable, both approaches will be severely tested.

Moschella is senior vice president of research at Computerworld, Inc. His Internet address is david_moschella@cw.com.

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COMPUTERWORLD

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Mar. 31	Solutions Series: Year 2000: Organizational Issues (part 1 of 2)	Feb. 14	Mar. 7
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May 5	Supplement: Electronic Software Distribution Distribution at Networld + Interop	Mar. 21	Apr. 11

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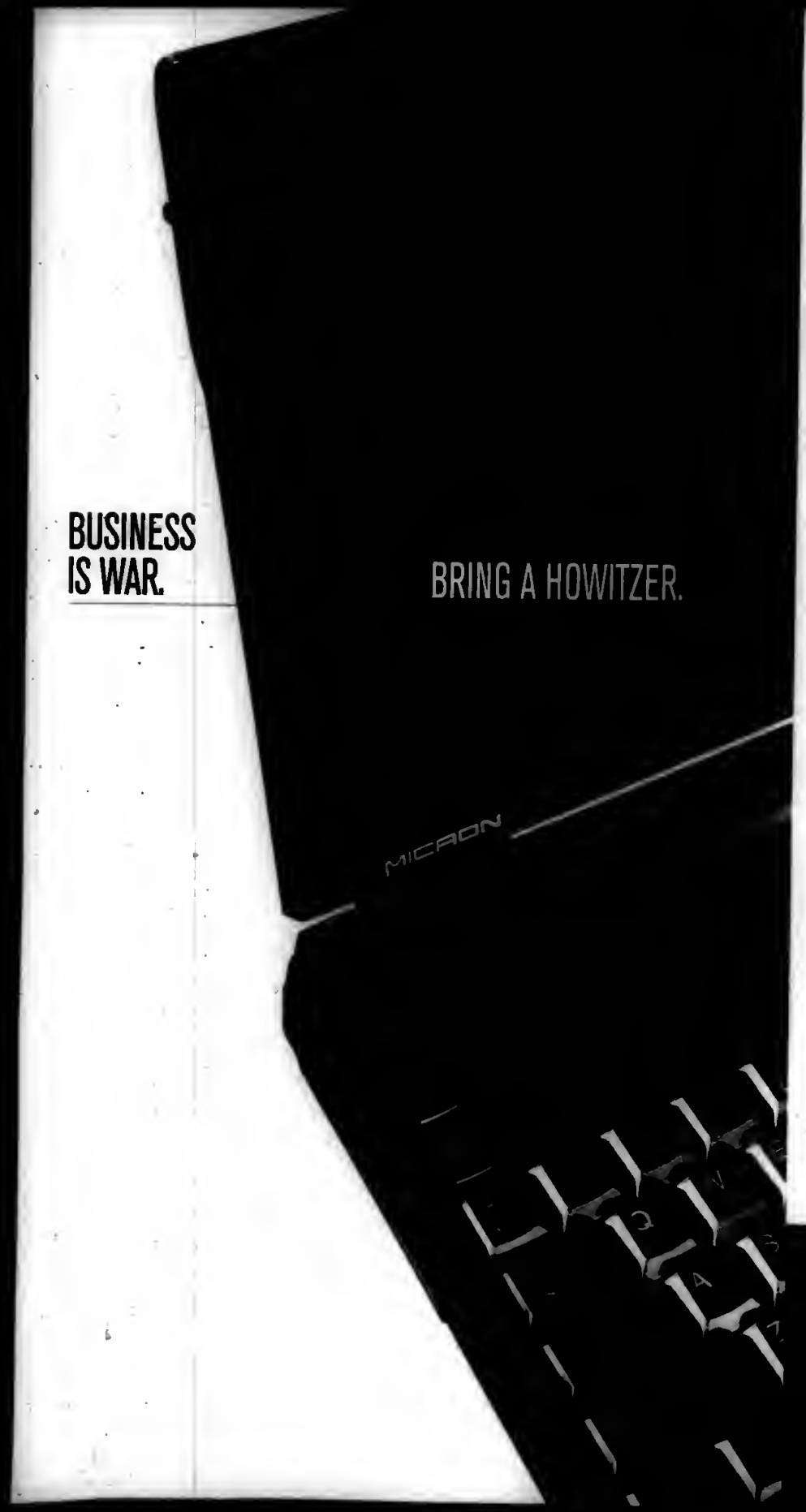

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Briefs

MAINFRAME MAINTENANCE

Are you making progress in getting your mainframe applications in compliance with the year 2000?

Base: 1,500 mainframe shops

Compaq takes aim at low-end server market

By April Jacobs

COMPAQ COMPUTER CORP. is digging deeper into the low-end server market with its new ProSignia 200 aimed at workgroups and smaller LANs.

The ProSignia 200 keeps frills to a minimum, with a 166-MHz processor and 512K bytes of cache, but doesn't leave out management software and setup support — two key areas for busy information systems managers.

NETWORK COMPUTING

Compaq is pushing the machine's desktop-range pricing and is also backing up the machine with a three-year warranty.

But users said that although they pay attention to price, maintenance means more.

"You apologize for price once, but you apologize for reliability forever," said Dennis Bosma, manager of IS at Kahler Realty Corp. in Rochester, Minn. Bosma added that he is pleased with Compaq's track record.

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Compaq, page 40

COMPAQ PROSIGNIA 200 FEATURES

Processor: 166-MHz Pentium

Cache: 512K bytes

Network interface card: Compaq's Netelligent

Extended Data Out memory: Up to 128M bytes

Error Checking and Correcting memory upgrade: 256M bytes

Vendors chip in for MMX

• *Intel chip ramps up speed, graphics*

By Mindy Blodgett

INTEL CORP. announced its new MMX chip for laptops and desktops with much fanfare last week as several hardware vendors announced products that support the new processor.

The Pentium MMX processor will let multimedia applications — such as videoconferencing and presentations — speed across users' screens.

The chip also will sharpen color graphics and clarify sound, according to Intel officials.

IS DEMAND THERE?

But whether corporate users will clamor for the high-powered machines is still an open question.

For demand to rise, corporations would need to be more involved in multimedia applications, a trend still growing in the business world, industry observers said.

"MMX will be aimed at the consumer market first," said John Dunkle, an analyst at Workgroup Strategic Services, Inc. in Portsmouth, N.H. "But small businesses are becoming

MMX chip, page 40

FUJITSU'S LIFEBOOK 655TX

Processor: 150-MHz Pentium

Size: 4.2 pounds and 1.2 inches thick

Screen: 12.1-in. active-matrix

• 'Appliances' offer prepackaged integration

Out-of-the-box storage on its way

By Tim Ouellette

PREPACKAGED "storage appliances" are hitting the market, providing out-of-the-box storage and letting some users avoid the dirty work of integrating different storage systems.

But don't rush to the shelves just yet.

Observers said this is only the first salvo in an attempt to hide the complexity of storage planning for data maintained on multiple platforms while providing true data access for all users in a company. That means users can ignore where their data is stored — mainframe, Unix or Windows NT server, for example — and not worry whether their client platform can access the data.

Analysts also pointed out that not everyone will want to give up detailed control of their storage network to one box.

"These are niche products for those desperate for storage now and who don't want to do their own integration work," said Paul Mason, an analyst at International Data Corp. in Framingham, Mass. "But the great thing is that you know it is going to work from the get-go."

The first of these bundled storage appliances from market leaders EMC Corp. and IBM combine open systems backup and storage management functions with tape and disk subsystems in one box (see chart). The products can act as a staging

Appliances, page 40

YOUR STORAGE APPLIANCE CENTERS

IBM and EMC are offering storage management "appliances" that combine hardware and software and come ready to run out of the box.

PRODUCT	EMC DATA MANAGER	IBM NETWORK STORAGE MANAGER
Processor	Sun SPARC	RS/6000 RISC
Tape library	Up to 10T bytes of data	Up to 40.2T bytes of data
Operating system supported	Sun Solaris 2.4	AIX 2.1
Management	Backup and volume management software	Adstar Distributed Storage Manager software
Storage	Up to 24G bytes of RAID 5 disks	Serial Storage Architecture disks for up to 144G bytes
Price	$115,000 to $525,000	$470,000 (starting price)

Servers & PCs

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Briefs

Compaq Armada grows

Compaq Computer Corp. in Houston last week announced an addition to its Armada 4100 line of laptops. The Armada 4131T has a 12.1-in. color screen, 133-MHz Pentium processor, 1.4G-byte hard drive and a price tag of $4,299. The notebooks come in two configurations: a lightweight version that is 1.5-in. thick and weighs 5 pounds and a standard configuration that weighs 6 pounds and has an integrated floppy disk drive. Compaq also lowered prices on its other Armada models.

HP workgroup server

Hewlett-Packard Co. in Palo Alto, Calif., last week announced a new low-end PC server aimed at small and medium-size workgroups. The NetServer LD Pro will be Pentium Pro-based and feature 512M bytes of Error Checking and Correcting (ECC) system memory, hot-swappable disk drives and up to 27G bytes of storage. It will also include three Peripheral Component Interconnect slots, two Extended Industry Standard Architecture expansion slots and a total internal storage capacity of 35G bytes. It is board-upgradable to dual Pentium Pro chips.

The NetServer LD Pro Model 1, with a 180-MHz Pentium Pro processor and 32M bytes of ECC RAM, starts at $3,399 and is shipping now.

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MMX chip

CONTINUED FROM PAGE 39

more multimedia savvy, and they may be attracted to this chip. However, while we see a performance gain with the MMX chip, it may not be enough for corporations, and it may seem too expensive, at least at first. Right now, MMX is all dressed up with no place to go in corporate America."

Intel has added 57 instructions to the MMX beyond the standard Pentium instruction set to support applications such as videoconferencing. It will offer clock speeds of 166 and 200 MHz for desktops and 150 and 166 MHz for laptop models — the fastest chips available for laptops.

Although observers wonder whether the MMX will find a home in corporations, some users say they see a need for high-powered multimedia in business.

"We are definitely interested in videoconferencing, for both laptops and desktops, and anything that makes that a little faster is good for us," said Steve Wittner, network manager at Centex Construction Group, Inc. in Dallas. "We have so many remote workers, and videoconferencing would really help communications."

But Wittner said he will hold off on buying first-generation MMX products.

"We don't want to be on the bleeding edge, and we would like prices to go down," Wittner said.

Industry observers expect prices for the technology to drop in the coming year.

Several notebook vendors jumped on the multimedia bandwagon with new product announcements, and more are expected in the coming weeks. Pentium MMX-based systems announced included the following:

- Fujitsu PC Corp. announced a 150-MHz LifeBook, which weighs 4.2 pounds and is 1.2 inches thick. The LifeBook 555Tx and 655Tx will cost around $4,000 and will be available next month.
- Texas Instruments, Inc. released the TravelMate 6100 Series with a 166-MHz processor, 12.1-in. screen and 2.1G-byte hard drive. The notebooks will range in price from about $4,999 to $5,199 and will be available next month.
- Packard Bell-NEC, Inc.'s NEC Computer Systems Division released the Versa 6000 series, with a 150-MHz chip, 12.1-in. screen and 16M bytes of RAM. The laptops will range in price from $4,699 to $5,199.
- Hitachi PC Corp. announced it was adding a 166-MHz machine to its Mx-Series notebook line. The new notebooks will be available next month, when pricing will be announced.

Appliances

CONTINUED FROM PAGE 39

area for moving little-used data to less expensive storage media.

"These products will eventually evolve to be complete storage servers attachable to anything," said Carl Greiner, an analyst at Meta Group, Inc. in Stamford, Conn.

Greiner said EMC's use of common components will help it get more complete, platform-independent data-sharing systems to users before IBM can.

FEWER EXPERTS

Although the price point for these appliances may seem high — up to $500,000 — company officials said the ease of installation cuts back on labor costs associated with integrating storage components.

It also can relieve a company's need to hire experts for each computer platform in its organization, said Vicky Vollmar, product manager of integrated systems at IBM.

For example, Texas Instruments, Inc. in Dallas is installing IBM's Network Storage Manager, because as an IBM customer it didn't want to have to evaluate, buy and integrate all of IBM's separate storage products. The product will back up clients that run mixed Unix, Windows NT and OS/2 clients at TI.

UPGRADE GLITCHES

But installing a storage appliance isn't always smooth. One user of Epoch, EMC's previous backup product, said he considered EMC Backup Manager but shied away from the cost because he already had all the various components installed in his network.

Network Storage Manager, with some models shipping and some due this quarter, is targeted at high-end shops that have up to 1,000 workstations or more. But Big Blue plans to offer lower-capacity and price-point options in the first half of this year.

IBM also has announced a special version targeted at handling multimedia files and plans more industry-specific versions of Network Storage Manager later this year.

Hopkinton, Mass.-based EMC's Data Manager began shipping last year. The company last month added support for Windows NT servers.

Compaq takes aim at low-end server market

CONTINUED FROM PAGE 39

Compaq desktops and servers.

Rolle said upgrades for the low-end Compaq machines make them much more powerful than a high-end PC, and built-in management features make them easier to oversee.

Kent Polzin, IS manager at Simmons Co. in Atlanta, said the Compaq servers he installed more than a year ago have yet to go down.

Polzin said he wouldn't use lower-end servers for corporate locations, but they would be ideal for remote plant sites, where users mostly run file and print applications.

Compaq's competitors include Hewlett-Packard Co., IBM and Digital Equipment Corp.

The ProSignia lines up against HP's NetServer E30, IBM's PC Server 310 and Digital's Prioris LX.

MEDICAL ALERT...
Heartburn Traced to Unix "vi" Editor
Don't let a cryptic editor give you indigestion! Trade in the Maalox for Unix tools you learned on the mainframe.
uni-SPF ispf-style Editor, Browse, Utilities, ... even Dialog Mgmt!
uni-XEDIT cms-style Editor with Full Macro Support
uni-REXX Portable System Control and Macro Language
NEW! netCONVERT solves ALL your cross-platform data conversion problems for MVS, VM, Unix and Windows/NT.
wrk/grp The Workstation Group
800-228-0255
sales@wrkgrp.com
http://www.wrkgrp.com

NEW PRODUCTS

PLASMON DATA, INC. has announced the DW 260, a 5.25-in. magneto-optical drive.

According to the Eden Prairie, Minn., company, the DW 260 reads and writes to 2.6G-byte rewritable disks. Integration software is included to allow compatibility with Macintosh, Windows 3.1 and Windows 95 platforms.

The external version costs $2,095.

Plasmon Data
(612) 946-4100
www.plasmon.com

PLAINVIEW BATTERIES, INC. has announced an AAAA-size battery made of lithium thionyl chloride.

According to the Plainview, N.Y., company, the PB-AAAA offers the highest available power, at 3.6V, of any AAAA battery for use in mobile and other devices.

The price is $15 per battery.

Plainview
(516) 249-2873

FIRST VIRTUAL CORP. has announced V-Cache, a family of storage devices for multimedia files.

According to the Santa Clara, Calif., company, V-Cache is a 155M bit/sec. RAID that attaches to an Asynchronous Transfer Mode network for high-quality video streaming.

It can support up to 50 simultaneous streams of video moving between storage and a network.

Pricing starts at $30,500.

First Virtual
(800) 351-8539
www.fvc.com

EXP COMPUTER, INC. has announced a portable eight-speed CD-ROM kit with a PC Card interface for notebook computers, the CD Traveler 820.

According to the Syosset, N.Y., company, the CD Traveler 820 kit includes a high-performance CD-ROM drive connected to a proprietary card that enables notebook users with a PC Card slot to operate the drive off the notebook's battery power instead of an external power source.

Pricing starts at $399.

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you

Dear IT Professional:

Steve Ballmer
Executive Vice President
Microsoft Corporation

There's no need to tell you that we're deep into the Information Age. The Web, e-mail, intranets, client/server applications — you've seen them all in your corporation. Or you've been concerned that you had to get them to stay competitive. But how do you cut through the noise and implement the best technology?

It's no easy task when your corporation's information sits on a variety of databases, legacy systems, and platforms. With change as inevitable as the approach of the new millenium, your technology decisions also have to be flexible enough to embrace tomorrow's fast-paced innovations.

That's where Microsoft stands out from the ordinary. We understand the competitive nature of business, how the right technology is crucial to success, and how technology products — regardless of vendor — must work together to enable it.

This means we don't just sell products. We sell solutions. To do it well, we partner with thousands of independent Microsoft Solution Providers worldwide to make sure our technologies solve real business problems — and help businesses stay nimble in the future.

We listen to our customers, too. They tell us they want reliable information without a lot of clutter. That's why we've launched the Corporate Solutions Program. In this program, we inform decision makers like you about our strategies and products, so you can make the best technology choices. It's a major new initiative designed to give you an inside look at where Microsoft is headed — and a heads-up on the competitive advantages you can expect from implementing Microsoft solutions.

The Corporate Solutions Program — What's in it for You?

This program is your personal link to Microsoft. In intensive briefings, you'll hear from our representatives and from your local Solution Providers how to drive down costs and boost productivity for quick, consistent

Microsoft®

bottom-line results.

You will also see real-world examples of the dividends Microsoft solutions are paying for companies today. You can even get a free on-site evaluation of Microsoft's entire line of technologies through the Microsoft Corporate Solutions Pilot Program.

Why Microsoft for corporations?

Microsoft solutions deliver superior client/server performance at a low cost of purchase and ownership. With their intuitive user interface, Microsoft Windows technologies reduce support and training costs dramatically.

Windows is also a time-tested and proven platform for development, so you have the power of choice. Leading independent developers in every industry offer sophisticated line-of-business software for Windows. In addition, tight integration across Windows server products, and between server and desktop Windows systems, makes it easier to develop your own applications.

You'll also find that Microsoft Windows NT® and the BackOffice™ family of server products interoperate smoothly with your legacy systems. That means you protect IT investments, even as you free up the flow of mission-critical information.

Of course, Microsoft's entire product line has been optimized to support corporate Internet and intranet solutions. From HTML editors to Web browsers to server software, Microsoft offers everything businesses need to build and maintain engaging, interactive on-line sites.

Simply put, Microsoft technologies make it faster and easier to get real business returns from every kind of information technology.

Microsoft — look again!

As an introduction to the Corporate Solutions Program, please take a look at the stories that follow. You'll see how Microsoft is helping corporations of all kinds turn their business goals into realities.

R/3 application suite helps maker of roof tiles stay on top

Implementation significantly improves access to financial information and ability to track and manage inventory.

The legacy system at Monier Inc., s manufacturer of concrete roof tiles, lacked the functionality required to maintain the company's customer service. Historical data was not available. Financial, sales and distribution information took up to 30 days to produce. Inventory was out of control.

Monier needed s system that could handle all the data involved in planning and coordinsting the processes thst tske plsce between procurement, sales and delivery. Its employees needed s system that could offer s better view of market and customer activity and help them control inventory and operations costs. To meet its gosls, Monisr chose SAP®'s R/3™, an applicstion suite intagrating financial, manufacturing, sales/distribution and human resources functions.

R/3 vastly improved access to financial data and the tracking and managing of inventory. Customer and product information that was not available can now be accessed in moments; Monier managers can identify, up to the minute, the sales volume, revenues, product mix and profitability of their top 10 customers and the top 10 products they buy. Bringing inventory under control led to a 30% improvement in product delivery.

Deploying R/3 slso enabled Monier to consoildate reporting snd spresdsheet processes, cutting financial reporting time to minutes; doubls its shipping sbilities; improve coordination between finance and sales/distribution; increase control over distribution and allocation of inventory; and reduce invoicing from ten days to one.

The R/3 suita runs in a client/server environment, with a Compaq ProLiant as the enterprise server and Microsoft® Windows NT® Server as the network operating system, at Monier's 15 offices and plants in the U.S. Currently 20 users in the company's Irvine, Calif., headquarters use SAP modules; another 140 users are online at the plants.

In 1997, Monier will bring its HR and payroll process online and migrate from an Oracle DBMS to Microsoft® SQL Server™ for Windows NT. Long-term goals include integrating plant maintenance into the system.

Soon, your net profits could include Internet profits.

An anticipated $150 billion will change hands over the Internet by the year 2000. SAP can make sure one of those hands is yours. A joint effort with Microsoft® now makes Internet and intranet commerce a profitable reality, with SAP's R/3 business processes available on a common platform on-line. Both customer-to-business and business-to-business transactions can be conducted completely electronically. It's fast, it's secure, it's revolutionary, and it has the potential to change the way you do business. After all, the Internet is the largest single source of information in the world today. And no company knows how to give you a better return on information than SAP.

SAP *A Better Return On Information™*

To find out how SAP software is helping more than 6,000 businesses do business better, call 1-800-283-1SAP, or visit us at http://www.sap.com

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DOE uses RADAR to hone in on delays in HR reporting process

Decision support tool gives HR users a quick and easy way to access database without constant involvement of IS staff.

At the Richland Operations office of the U.S. Department of Energy (DOE-RL), fulfilling a request from HR for a report used to take up to three weeks. First, data had to be pulled from the legacy system and hard files. Once the HR representative got the report from IS, they put it into a word processing application and manipulated it manually. The process was time-consuming, and the data was inconsistent, out of date and inaccurate.

Federal workers use BusinessObjects to access and analyze timely and accurate HR information and digest and process voluminous amounts of data stored in SQL Server.

DOE-RL has now deployed an application, Rapid Access to Desktop Applications for Resource Management (RADAR), that reengineers processes to provide quality HR customer support and consulting services to its employees.

RADAR uses the BusinessObjects decision support tool from Business Objects, client/server software from PeopleSoft and the Internet for HR applications. The BusinessObjects Windows® 95 clients access Microsoft® SQL Server™ to create an integrated HR system.

Some 40 federal workers use BusinessObjects to access and analyze timely and accurate HR information and digest and process voluminous amounts of data stored in SQL Server. This data includes external trends affecting HR as well as personal demand forecasts related to scheduled and potential operations. BusinessObjects saves the DOE-RL time and money by giving HR users a way to access data in SQL Server without the constant involvement of the IS staff.

RADAR is not the only success BusinessObjects has is working with Microsoft. Microsoft chose BusinessObjects as the decision support tool in its Alliance for Data Warehousing framework. The tool will provide users with integrated query, reporting and OLAP on top of Microsoft SQL Server data warehouse solutions. BusinessObjects is among the first decision support tools to receive Microsoft's "Designed for Windows 95" and "Office Compatibility" logos.

Not the same old drill.

BusinessObjects 4.0 Integrated Query, Reporting, and OLAP

You'll notice the difference almost instantly when you use BusinessObjects™ 4.0 to access and analyze corporate data. Because with the world's leading integrated query, reporting, and OLAP (online analytical processing) tool, the moment you want to drill for more answers, you can. Automatically. Right from within your report.

Our integrated approach eliminates the need for switching between multiple tools or stopping to use complicated transformation utilities. So you can take advantage of BusinessObjects 4.0 unmatched multidimensional analysis and drill down capabilities—without interrupting your train of thought.

From the start, our sole focus has been on helping people make fast, informed decisions. In fact, we were awarded a patent for our query technique, which shields users from the complexities of corporate databases. The product is remarkably intuitive to learn and use. And so easy to set up, deploy, and maintain that it frees IS from many day-to-day support tasks.

According to *InformationWeek*, with our new release, BusinessObjects 4.0, we have "made the easiest-to-use query tool even easier." BusinessObjects was voted the number one decision support/OLAP tool in the 1996 *Oracle Technical Journal* Best Product Awards. And both Microsoft and Digital selected BusinessObjects as the desktop decision support tool in their initiatives for data warehousing and data marts.

We're proud that IDC found that we outsold our nearest competitors two-to-one in 1995, and ranked us first as the worldwide market-leading independent software vendor in query and reporting tools. But we haven't let all this success divert our attention from pushing decision support solutions forward. BusinessObjects 4.0 is proof of that.

See the difference. You won't settle for the same old tool once you learn more about our product. Call today for your free demo disk at **800-527-0580 Ext. 127** or visit our web site at *www.businessobjects.com/drill*.

BusinessObjects voted the number one decision support/OLAP tool in the 1996 *Oracle Technical Journal* Best Product Awards

"Business Objects users queue to praise latest release" —*ComputerGram*

COMPUTERGRAM

Microsoft selects BusinessObjects as the desktop decision support tool for *The Microsoft Alliance for Data Warehousing*. BusinessObjects 4.0 is certified for Microsoft Office.

INFORMATIONWEEK

"(BusinessObjects 4.0) made the easiest-to-use query tool even easier." —*InformationWeek*

BUSINESS OBJECTS®

First in Enterprise Decision Support™

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Digital-Microsoft Alliance provides solutions for Enterprise Computing

Teaming allows vendors to offer new computing category: Windows-based solutions for the enterprise

The Digital-Microsoft Alliance for Enterprise Computing — now in its second year — combines Microsoft client/server products with Digital Equipment Corp.'s leadership in enterprise systems, service, support and systems integration.

The Alliance enables companies to deploy business solutions on Microsoft® Windows® and Windows NT® operating systems, while providing them with the assurance of integration into the most complex business environments — more quickly, completely and cost effectively than with any other vendor.

You are looking to use standard applications that can provide you with innovative ways to access the wealth of information that is buried within departments and regional offices on various databases, diverse systems and platforms.

Specifically, you want applications that are highly available, deployable globally with delivered performance, have minimal risk of failure, and can be managed by a continuously leaner set of resources, in terms of people and budget. In other words, you want an information system that will increase your company's revenue, margins and profitability.

That's a tall order for any one computer company to deliver. However, the Digital-Microsoft Alliance for Enterprise Computing provides you with the solutions to help you

accomplish all this and more.

By uniting the products, services and support teams of both companies, the Digital-Microsoft Alliance can provide you with access to industry-leading solutions and unmatched global coverage that will greatly contribute to the success of your business.

In fact, the Alliance brings into being a whole new category of computing — Windows-based enterprise computing. This new category refers to the broad deployment of Windows-based computing solutions throughout an enterprise — a deployment that combines everything from products, technology, services, support, systems integration and interoperability.

Microsoft digital
ALLIANCE
FOR ENTERPRISE COMPUTING

Combined strengths

Windows NT® Server, Windows NT® Workstation and Windows® 95 form the foundation on which an enterprise can build a secure and scalable information system. Other applications from Microsoft, such as BackOffice™, SQL Server™ and Microsoft® Exchange Server, form the building blocks that can be used to create the enterprise-wide information system.

Digital provides you with the most advanced choice of Alpha- and Intel-based systems, Windows-based integration expertise with mission-critical computing systems, and a worldwide network of 7 x 24 x 365 service and support engineers. Digital also offers software products that provide manageability and cluster capabilities.

Engineers from both Digital and Microsoft are working collaboratively to build mission-critical products.

Complementing this product set are tools from independent software vendors.

Knowledge and expertise

Digital and Microsoft both share a deep knowledge of the other company's technologies. For example, Microsoft is delivering server applications across Intel and Alpha systems simultaneously, and Digital and Microsoft together are porting the 32-bit version of C++ for Windows NT to the Alpha platform so that developers can use one common source-code base for both Intel- and Alpha-based platforms.

In addition, Digital and Microsoft are implementing common API standards so that an IT staff will be able to develop an application once and deploy it on a variety of operating system environments. This type of leverage will save a company's IT department time and money and will permit the redeployment of valuable resources.

Engineers from both Digital and Microsoft are working collaboratively to build mission-critical products. One example of this collaboration is the integration of Microsoft Exchange Server with Digital's MAILbus 400 and the Digital x.500 Directory Service enterprise mail solutions. This combination of products results in highly reliable message transport and directory services.

Delivering enterprise service solutions

The Alliance provides you a broad choice of complete support services to design, implement and keep mission-critical systems running and to help you control and manage software and hardware assets throughout a heterogeneous enterprise.

Digital has more trained and certified Windows NT service professionals worldwide than any other Microsoft partner . . . even more than Microsoft itself. Digital also provides companies with helpdesk support for Microsoft client/server technologies and desktop applications for users and IS professionals.

Windows NT integration solutions

Digital currently offers the most comprehensive Windows NT integration solutions in the marketplace. Based on a proven three-tier client/server model, Digital's Windows NT integration solutions enable application developers to write software that seamlessly integrates desktop, department data center applications and data.

Digital currently offers the most comprehensive Windows NT integration solutions in the marketplace.

Enterprise solution centers

The Alliance has opened two solution centers — in Bellevue, Wash. and in Valbonne, France — dedicated to demonstrating Windows-based solutions in heterogeneous environments. Visitors to these solution centers can observe how specific Windows-based solutions can be deployed by Digital systems integration experts and certified Microsoft solution developers. Demonstrations at these centers include:

- an integrated manufacturing enterprise base on OpenVMS, Windows NT and ISV partner solutions;
- a Windows NT-based management solution

showing performance and system management across a multivendor enterprise;

- a messaging solution based on Microsoft Exchange Server, integrating existing E-mail applications and providing access to the Internet; and
- a migration from ALL-IN-1 to Microsoft Exchange Server.

The Digital-Microsoft Alliance ensures that the Internet and Intranet are integral components of your enterprise-wide computing solution.

Systems integration services

Digital can work with you to plan your Windows domain, establish an integrated architecture, determine the systems configurations, and characterize the performance and availability of your applications environment. And on top of all that, Digital can deliver the comprehensive planning and logistical support that is required for full operational deployment between heterogeneous messaging systems.

Internet and Intranet

The Digital-Microsoft Alliance ensures that the Internet and Intranet are integral components of your enterprise-wide computing solution. For example, Internet Explorer from Microsoft supports multimedia extensions, along with background sounds, scrolling marquees and online video.

This multimedia functionality of Internet Explorer allows the user to explore the world of 3-D with VRML or to view foreign language Web sites with the international extensions framework that is required for future growth.

Message transport and directory services

Digital offers a solution set to provide companies with message transport and

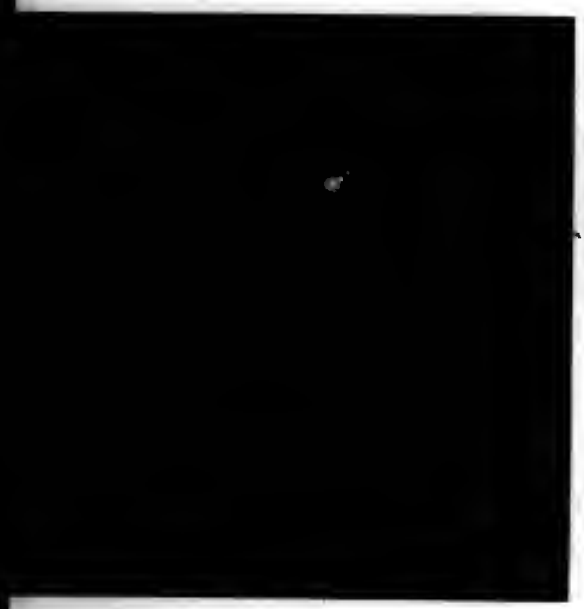
The
PUNDITS

These guys are

Microsoft digital
ALLIANCE
FOR ENTERPRISE COMPUTING

The challenge is to accomplish seamless integration of new technology while protecting investment in existing hardware and software.

directory services. Among these services are products such as portable middleware, common network infrastructure, 64-bit Alpha systems, Intel systems, storage hardware and management products. In addition, this product set is complemented by tools from independent software vendors (ISVs).



AllConnect program

If your IT system has multiple operating environments and distributed cross platform client/server applications, the challenge is to accomplish seamless integration of new technology while protecting investment in existing hardware and software with no disruption of service. Digital's AllConnect program lets you combine the strength of Windows NT, OpenVMS and UNIX through solutions, services and support.

The AllConnect Program simplifies the integration and management of these complementary environments. Users, application developers and systems managers can view this integration as a single environment while still taking advantage of the attributes inherent in the operation systems.

Enterprise messaging solutions

Microsoft Exchange Server is the strategic mail product for Digital's Windows NT systems. Digital's enterprise messaging products, services and support can transform your enterprise organization's disparate

messaging environment into a cohesive, productive whole.

Digital is working closely with Microsoft to provide the expertise and resources that customers require to design, implement, manage and support solutions based on Microsoft Exchange Server in a client/server environment. Presently Digital is delivering services that include technical consulting, architectural design, technology selection, solutions implementation and integration, as well as life-cycle maintenance and support services.

Migration to Windows NT

Digital is a leader when it comes to fine-tuning high-end enterprise applications to address the needs of customers. Digital has learned how to transform technology advantage into applications benefits, and is bringing this experience to the Windows NT platforms as applications are being rapidly migrated in response to customer demand. For example, Windows NT Server Coexistence and Migration Services will ensure that your Novell NetWare servers and clients are seamlessly integrated with or migrated to Windows NT.

Total approach to information systems

The Digital-Microsoft Alliance for Enterprise Computing provides the products, services and support teams that give you and your company access to industry-leading solutions as well as unmatched global coverage. By virtue of its total approach to information systems, the Alliance offers solutions that will greatly contribute to the success of your business.

Digital is a leader in fine-tuning high-end enterprise applications to address customer needs.

BAAN's Scalable ERP Solution Now BackOffice Compliant

High-end ERP Functionality on Intel Platform
Eases Integration of the Entire Supply Chain

With BAAN IV BackOffice from Baan Co. slated for availability in March, 1997, companies seeking enterprise-wide business solutions will have access to high-end application functionality that takes advantage of Microsoft® BackOffice™ and Windows NT® Server. Optimized to meet the technical standards of Microsoft's BackOffice logo program, BAAN IV BackOffice was the first enterprise software product to be tested, integrated and shipped as a logo-certified BackOffice enterprise solution to meet the needs of an entire supply chain.

By taking advantage of BackOffice technology, Baan reduced the complexity usually associated with the implementation and maintenance of large-scale enterprise applications.

Baan's enterprise-wide software automates the flow of information from order receipt throughout the materials management and production processes, to delivery of finished products, including integrated financial information. Companies with hybrid manufacturing environments in the automotive, electronics, project and process industries can take advantage of Baan's applications to streamline and manage their business information and processes.

By taking advantage of BackOffice technology, Baan reduced the complexity usually associated with implementation and maintenance of enterprise applications. For example, BAAN IV BackOffice ships with both the BAAN IV suite of software and Microsoft® SQL Server™ on a CD-ROM. The single CD and installation Wizards reduce installation time from days to hours. "By putting BAAN IV BackOffice on CD-ROM, we ensure that customers get up and running quickly, so they can concentrate on their business, not installation," said Rocky Gunderson, Vice President of Americas Marketing at Baan.

BAAN IV BackOffice also includes integration with Microsoft Active Internet Framework, including Internet Explorer, making Baan's enterprise applications available across internets and intranets. BAAN IV BackOffice will bring unprecedented application scalability and ease-of-use to the entire enterprise, from large corporate sites to networks of smaller suppliers and customers, facilitating integration of entire supply chains.

Scalable Solutions for the Entire Supply Chain

Baan brings the power of their Dynamic Enterprise Modeling (DEM) capability to a broad range of enterprises with BAAN IV BackOffice. Baan's business software automates the flow of information from raw materials through the production process to delivery, and is critical to companies at all points of the supply chain. And Baan's DEM functionality extends the traditional Enterprise Resource Planning model by enabling companies to adapt their business applications to changing organizational structures, business practices and operational procedures. Now, with BAAN IV BackOffice, Baan has integrated its flagship BAAN IV enterprise business software with Microsoft BackOffice and brings unprecedented scalability and ease-of-use to the enterprise applications market.

For more information on BAAN IV BackOffice call 1-800-644-4634.

BaaN

The Baan Company, 4600 Bohannon Drive, Menlo Park, California 94025 • http://www.baan.com

GE Capital IT Solutions gives Aveda Corp. a technology "makeover"

Maker of lifestyle products now sees the beauty of putting its order status system on the Web.

GE Capital
Information Technology Solutions

Not nil buninnnn dncisionn nm based solely on "business" issues. Consider the nxample of Aveda Corp., n $100 million manufacturer of benuty and lifestyle products created from pure flower and plant essences. Aveda's primary concern, as spelled out in its mission statement, is thn snvironmnnt, nnd nvnry decision at the company nnvolvnn around its commitment to be ecologically responsible.

Aveda'n old process of ordering products and thnn chncking the ntntus was highly pnper-intnnsivn nnd time-connuming. The more than 2,000 salons, stores and distributors (SSDs) supported by Aveda would fax, mail or phone orders into Aveda's customer service group, who retyped them into an AS/400 system. Thn only wny thn cnmpany's trade partners could check the status of orders was to call customer service — and only during specific business hours.

The new Internet system provides extended customer service and up-to-the-minute order and shipping information on a 24-hour basis, anywhere in the world.

Aveda called upon GE Cnpital IT Solutions, with its new Enterprise 2000℠ program (see next page), to help implement n paperless Internet-based order entry snd tracking solution based on Microsoft's Windows NT® Server 4.0 and BackOffice™ technology. Thin clieat/server solutian gives Aveda the ability to deliver dynamic, paperless order information to any of its trade partners that want to participate.

Now, Aveda's SSDs can order products and check the status of orders via the World Wide Wnb. Thn intnrnnt nyntnm provides nxtnnded cuntomer servicn nnd up-to-the-minute order and nhipping information on a 24-hour basis, snywhere in the world. The system reduces the need for customer service phone support and css offer on-lins product descriptions and announcements,

> "Our mission at Aveda is to care for the world we live in, from the products we make to the ways we give back to society. At Aveda, we strive to set an sxample for environmental leadership and responsibility."
>
> *Horst Rechelbacher, Aveda founder and CEO*

live customer forums, and sales histories — all without the use of paper.

Aveda, a company recognized for innovation in plant technology and environmental protection, has also been on the leading edge of the Enterprise 2000 program. Aveda continually searches for ways to combine nature with new technology to protect the environment. The Microsoft Internet solution provided by GE Capital IT Solutions extends this philosophy to the frontier of electronic commerce.

For more information on the Enterprise 2000 program, call (800) 873-2827, or, visit the GE Capitol IT Solutions Web site at: www.ameridata.com.

AVEDA
THE ART AND SCIENCE OF PURE FLOWER AND PLANT ESSENCES

The Internet solution extends the philosophy of combining nature with new technology to the frontier of electronic commerce.

IN JUNE, GE Capital Information Technology Solutions, a Microsoft Solutions Provider, expanded its Microsoft BackOffice capabilities through a strategic initiative called Enterprise 2000. Through Enterprise 2000, GE Capital IT Solutions and Microsoft are addressing the escalating demand for design, development and implementation of client/server, electronic messaging and Internet solutions.

Key elements of Enterprise 2000:

- Placement of senior Microsoft Consulting Services (MCS) professionals at nationwide GE Capital IT Solutions locations
- A large MCSE/MCSD training and development program, with apprenticeships provided by GE Capital IT Solutions
- Microsoft-dedicated solution sales specialists throughout GE Capital IT Solutions
- Formation of a Microsoft Solutions practice within GE Capital IT Solutions' consulting division

GE Capital IT Solutions is an international provider of industry-standard PC products and value-added systems integration, networking and maintenance services, and part of GE Capital Technology Management Services (TMS), a company that provides full life cycle services to help customers manage their technology investments. GE Capital Services is a diverse financial services company with 26 specialized businesses and a wholly owned subsidiary of General Electric Co.

Mobil Land Development builds a financial system for its future

Client/server system from FlexiInternational and Microsoft provides benefits to Mobil Land projects

The Mobil Land Development Corp. quite literally paves the way for residential and commercial building across the country.

The company purchases undeveloped land and establishes its infrastructure — an undertaking that involves everything from obtaining the proper zoning to selling finished sites.

Microsoft has selected Flexi as one of 15 worldwide Tier 1 development partners, and a provider of Microsoft BackOffice solutions.

The problem that Mobil Land faced was that it needed to analyze its financial performance, and streamline the flow of information to decision-makers throughout the company. However, these goals were difficult to achieve with the company's existing mainframe systems.

"The keys to success were the dedication of our people and support from the Flexi team."

To better manage its business, Mobil Land turned to FlexiInternational, a developer of accounting software based in Shelton, Conn., and Microsoft Corp. for a client/server financial system. According to Mobil Land's assistant controller Dennis Ayre, who served as leader of the project, "We needed a flexible system — a system with an open architecture so we could develop integrated applications to run our business efficiently."

Working with FlexiInternational, Mobil Land installed a financial system that it will be able to build on for the future. The financial system currently consists of Flexi's general ledger and accounts payables applications (with fixed assets and accounts receivables applications to be added in 1997), Microsoft® SQL Server™, and the Microsoft Windows NT® Server operating system.

As a result of the new installation, Mobil Land's executives are working with financial information that is both timely and accurate. The company has achieved two other benefits: It is now able to consolidate its books in a few days, and can also provide information in a real-time environment.

According to Mobil Land, migrating from its legacy system for client/server accounting entailed a significant effort, but it was well worth it. "We feel enshockled," says Ayre. "We're doing our jobs better, faster and with fewer resources."

You'll need flexibility to cross that bridge to the 21st century.

There's a lot of talk about that bridge — and it works just fine as a metaphoric roadway to the future. But those of us who deal with massive volumes of financial information know that the real journey will take us far from the straight and narrow. ● Technological crossovers — paradigm shifts — always twist and turn the status quo. Interoffice becomes international; there's no mother tongue or common currency; no time of day except real time. ● The evolving software industry holds your business in a state of suspensioo, uncertain of when or where or whether the next paradigm shock will throw you off course. Unless you're very flexible, and well connected. ● We are. From the beginning, Flexi financial software was built on an open, object-oriented architecture, enabling you to swiftly adapt to unforeseen changes. It's a strategy that's paved the way toward our total alignment today with Microsoft's worldwide vision and technology. Microsoft will call the major turns down the road — and we're ready to embrace them. ● We're not talking here about metaphors, but real software components that interact, and adapt to new terrain. ● Best you get connected. **Get FlexiFinancials to help you cross that bridge safely.**

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The fast growing Kentucky-based company called on Coopers & Lybrand, L.L.P. to help it find u soltwure solution. "Iu the end, our choicu wuu uulf-evidunt — Nuviuiou Financials," said Michael Steinmetz, director of MIS for StudioPLUS. "Navision is flexible. It is very adaptable to our future needs and well-suited for u high growth company such as ours. In addition, Navision'u database has the highest integrity i have ever witnessed.

"Navision Financials is not a Windows front end. It's completely integratable with Microsoft's suite of products."

Nuvision Fiuuuciaiu iu uiso truiy a Microsoft® Windows®-based uystem. "It is not u Windows front and, it'u compietuiy integratable with Microsoft's suite of products," Steinmetz added.

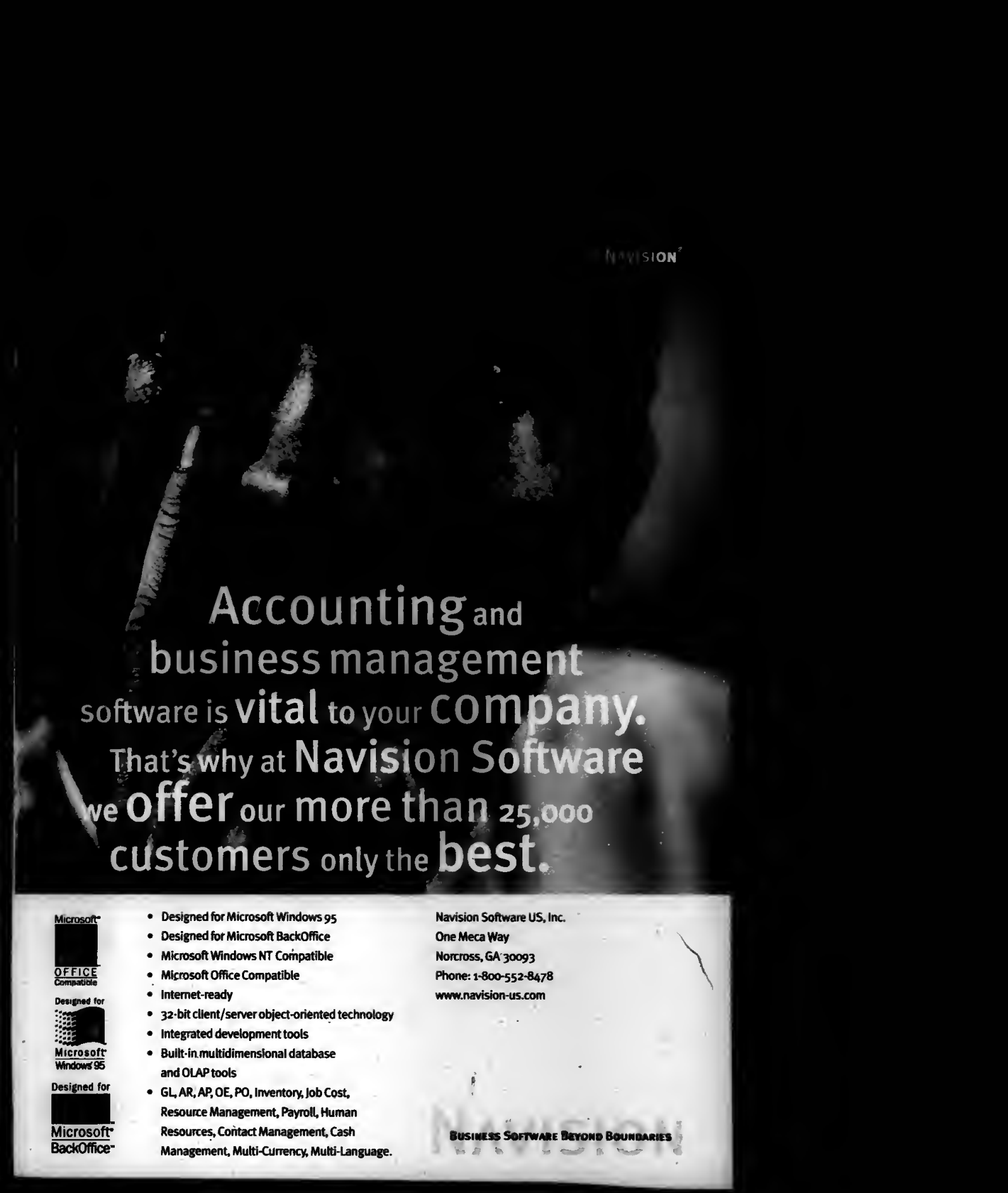
Another deciding factor was Navision'u ubility to offer a suitu of accounting and business managument modules and granules. Unliku other packages, with Navision a third-party devuloper is not needed to provide functions. For uxample, Navision's job costing function allows StudioPLUS to track the uxpenses associated with its building projects, reconcile them and uvaluate their

NAVISION *software* US, Inc.

etetus. Usere, from project menagure to accounting to uxecutive officers, all have access to the same information, helping to ensure that the company meets its goals.

"Other systems force you into a mindset that you must buy something off-the-shelf," said Steinmetz. "Navision'u Financials solution iu developed into your own uystem by modifyiug the ureas that matter to you. If you don't liku something, you changu it."

According to Bob Boyle, a Coopers & Lybrand consultant who worked with StudioPLUS, suothur decidiug factor was Naviuiuu's 25,000 worldwide uuurs. "With Navision Financials we got u top-tier product in turmu of fiuxibility, capabiiitiuu uud uxpandability for a mid-tier price."



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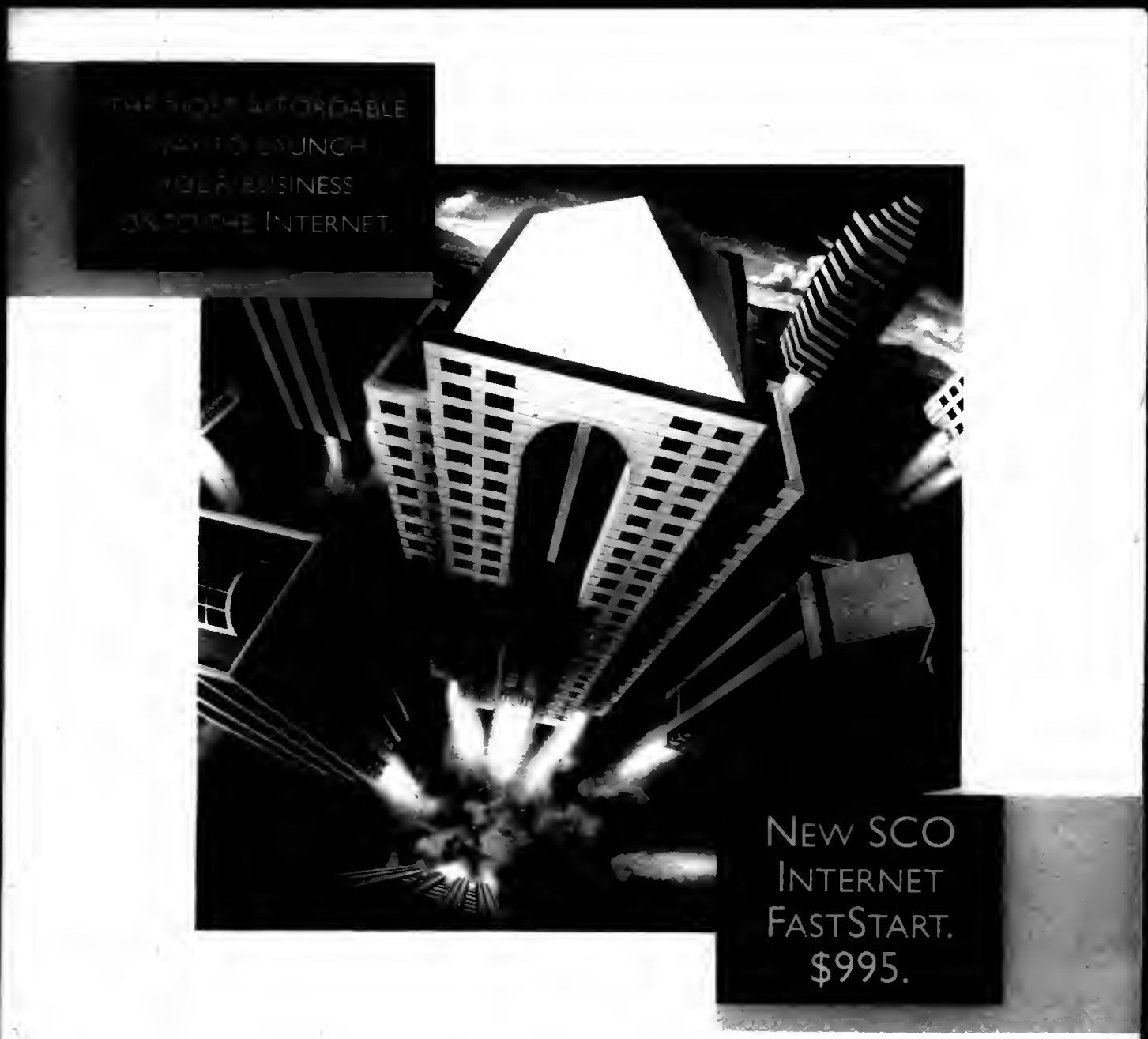

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Software

Client/Server • Development • Operating Systems

Briefs

Simple relationships

Easyflow Ltd. in Irvine, Calif., has introduced a PC-based, single-user database that it said can automatically create relational links between separate [illegible]. The software, also called Easyflow, is aimed at small businesses and organizations that lack database programming skills. Easyflow will transform data-base models similar to those of [illegible] structures, the company said. The software is available [illegible]

WHERE IT'S AT

[illegible]

Mainframe MIPS

1996

Base: 240 users surveyed at November's Oracle OpenWorld conference in San Francisco (multiple responses allowed)

Source: The Data Warehousing Institute, Bellevue, Wash.

Multimedia training

KnowledgeTools Corp. in Atlanta has announced a new line of multimedia training applications that require up to 8X less memory and network bandwidth than previous training software. A CD-ROM-based course in Lotus Development Corp. Notes 4.0 is the first title in the series, which includes audio and animation options. A single-user version costs $99. Other titles scheduled for release in the next two months include Microsoft Corp.'s Exchange, Schedule+ and Windows NT Workstation.

Tooling Cobol

Optimized Technologies, Inc. in Chatsworth, Calif., has released Cobweb, a tool that debugs, audits and tests mainframe Cobol programs and can be used to help reduce year 2000 compliance costs. The package could [illegible] for an [illegible]

No room at the warehouse

▸ *Speed-boosting techniques add to storage costs*

By Craig Stedman

ALL OF THE indexes and summary tables used to boost data warehouse speeds can add up to a lot of data in their own right. In fact, they often hog more disk space than the raw data in a warehouse, according to users and analysts.

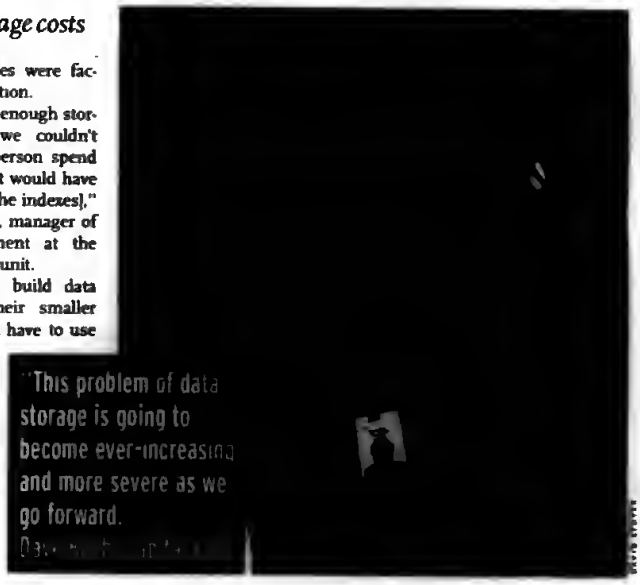
That can drive storage budgets off the charts, experienced warehouse managers said. Dealing with the extra data can also pose a big personnel burden for some companies.

For example, the business operations unit at MCI Communications Corp.'s mass-markets division found that the first indexes built for a prototype data mart increased its data count by 150% — and that was before indexes supporting complex ad hoc queries were factored in to the equation.

"We didn't have enough storage space, and we couldn't afford to have a person spend the three months it would have taken [to build all the indexes]," said Chris Courim, manager of software development at the Denver-based MCI unit.

Companies that build data warehouses or their smaller data mart brethren have to use indexes, summary tables, prejoins and other mechanisms to prevent query throughput from bogging down. The performance boosters require constant fine-

Data, page 46



It's do-or-die time for OpenDoc

▸ *Possible link with JavaBeans may give technology a boost*

By Sharon Gaudin

WITH ITS CRITICAL Windows version on the market for about a month now, IBM's OpenDoc architecture is reaching the deciding hour.

For two years, IBM has been touting OpenDoc as a powerful, cross-platform architecture for desktop applications. Critics and proponents alike agree that it is powerful. But it hasn't yet taken off and become a major player, unlike rivals ActiveX from Microsoft Corp. and JavaBeans from Sun Microsystems, Inc.

COMPONENT ARCHITECTURES

ActiveX, which was derived from Microsoft's OLE technology, is gaining wide acceptance, spurred by the widespread use of the Windows operating system. JavaBeans, the youngest of the three, is still in its infancy but is garnering attention because of Java's popularity.

IBM said OpenDoc is alive and picking up speed, with about 1,000 developers downloading OpenDoc for Windows off IBM's World Wide Web site since it was released last month. And a rumored deal to merge OpenDoc with JavaBeans could mean an immediate boost, observers said.

Now users and analysts said OpenDoc has what it needs to fly. But the question remains: Will it pick up enough speed to get off the ground?

"This is what we've been waiting for," said the systems manager at a major U.S. bank. "This is the time when it could take off, certainly. . . . We have some OpenDoc components that manage our real-time trading. Our use will probably double anyway."

The systems manager, who asked not to be identified because he sees his use of OpenDoc as a competitive strategy, said he started using OpenDoc because of its cross-platform promise, and he is hoping to put it to use now.

But David Bowser, distributed

OpenDoc, page 46

ELECTRONIC FILING

Tax software vendors compete against IRS

By Randy Weston

SOFTWARE VENDORS are marketing new client/server applications that help companies meet new federal electronic tax filing requirements. But some companies are holding off buying the applications because the Internal Revenue Service offers similar software for free.

"We encouraged the [IRS] to develop a Windows-compatible software system. We wanted it so corporations large and small could use the [electronic filing system] without a heavy investment," said Karen Carter. She is a member of the lobbying group American Payroll Association and works as corporate payroll manager at Gaylord Entertainment Co. in Nashville.

As of July 1, 1997, the IRS will require companies with more than $50,000 in annual employment taxes to pay their federal taxes electronically [CW, July 15]. As of Jan. 1, 1999, companies with employment tax deposits of more than $20,000 must make electronic payments. Now, companies with more than $47 million in employment taxes must file their taxes electronically.

For information on electronic filing requirements, visit www.irs.ustreas.gov, or call (800) 945-8400 (Northern states) or (800) 555-0477 (Southern states)

In an attempt to limit corporate technology investments, Carter said the IRS bowed to the American Payroll Association's wishes and hired NationsBank Corp. and First Chicago NBD Corp. to develop free software. The IRS has a toll-free telephone number to order the software (see box above).

Tax software, page 46

FRANKLY SPEAKING

Should you take the skills gamble?

FRANK HAYES

Aaaaaa waitas: "It appears that [thanks to year 2000 projects], those Cobol skills I worked so hard to abandon may come in handy very soon. The hard thing now, however, will be trying to decide if I want to take a two-year vacation [from] trying to keep my client/server and distributed systems skills current. Do you have any thoughts on any 'problems' this type of vacation may produce after the party is over?"

Sure, Party Guy — you could find yourself with a pocketful of cash and a two-year crater in your client/server expertise. Then again, intranets and other new technologies might send much of that expertise to the scrap heap anyway.

In fact, no matter what technology decision you make, you stand a good chance of getting burned.

That's true of IS managers and just about every other technical professional, too.

IS managers know the problem as the "skills crisis." They're spending big bucks for top talent in hot technology areas such as the Internet, data warehousing, enterprise client/server applications and, of course, year 2000 Cobol fixes.

But those hot new hires are often out the door when a better offer comes along. That high turnover rate makes the final bill for filling a job even higher.

Sounds like nirvana for technical professionals, the people who collect those ever-higher salaries in the skills crisis — right?

Wrong. As technology rockets along, techies have to keep upgrading their skills, or they'll be left behind.

And those skill upgrades require choices. Will Sun's Java language stay hot, or is Microsoft's Visual Basic the wave of the future? Will SAP skills be in bigger demand than PeopleSoft experience? Is it time to learn object databases, or will anyone care a year from now?

Guess right, and you can strike it rich. Guess wrong, and you've wasted your time — and you'll find yourself behind the technology curve.

Some technical skills are so unpredictable they rival the stock market as an investment roller coaster. Mainframes may be dying, but MVS skills command a bigger salary premium than Windows NT or Unix, according to *Computerworld*'s 1996 Skills Survey. Visual Basic is widely used, but so many programmers know it that it doesn't bring much of a bonus.

As the year 2000 approaches, Cobol skills will once again be hot — so hot that a Cobol programmer doing year 2000 work could be hired at $80,000 instead of $40,000, according to one recruiting firm.

On the other hand, the Cobol party *will* be over in a few years. Some of that Cobol code will be scrapped, and much of the rest will be maintained with improved tools that will guarantee a permanent oversupply of Cobol programmers.

So, Party Guy, if you really want to spend the next few years saving some company's post-2000 future, make sure there's room in it for you. A lot of those Cobol applications will be ripe for turning into distributed systems once you and your cohorts have fixed them up, so bargain your way to future client/server opportunities before you sign away your life.

After all, you're in demand — at least for now.

Hayes is Computerworld's staff columnist. His Internet address is frank_hayes@cw.com.

Data costs

CONTINUED FROM PAGE 45

tuning as business needs change and more end users are added, further complicating warehouse management (CW, Jan. 6).

Hoping to ease the strain on his budget, Courim switched from a standard relational database to Sybase, Inc.'s Sybase IQ, a decision-support database that automatically indexes and compresses data. MCI now stores about 85G bytes of data in just 60G bytes of disk space, he said.

But decision-support databases haven't caught on in a big way yet, because they force information systems managers to learn new ways of configuring and backing up data (CW, Dec. 16).

Users who continue to rely on relational databases typically find that indexes, summaries and their ilk multiply the raw data in a warehouse by two to five times, said Alan Paller, director of research and education at The Data Warehousing Institute in Bethesda, Md. That kind of increase is driven by the need to build multiple indexes and summary tables to anticipate all the different directions that user queries can take.

IT GROWS AND GROWS

How large is your data warehouse, and how big is it expected to be?

	Current	In two years
Raw data	**59G bytes**	**174G bytes**
Indexes	**67G bytes**	**153G bytes**

Base: 200 Fortune 1,000 sites that have or are implementing data warehouses

Source: Sentry Technology Group, Westboro, Mass.

A survey released in December of 200 large warehousing sites by Sentry Technology Group in Westboro, Mass., found that indexes alone are larger on average than the raw data that companies have in their warehouses. That is expected to change over time, but not by much (see chart).

Trying to cope with the avalanche of warehouse data "is one of the main things on our mind right now," said Dave Buch, information technology director of data warehousing at Capital One Financial Corp. in Falls Church, Va. The credit-card company runs six big Oracle Corp.-based data marts.

One of the marts needs three times as much space for all of the indexes and summary tables as it needs to hold the raw data, according to Buch. The others aren't disk hogs yet, since they are summaries of larger data sets.

But that will change, because Capital One's end users are demanding more access to raw data, Buch added. "This problem of data storage is going to become ever-increasing and more severe as we go forward."

Tax software

CONTINUED FROM PAGE 45

Although the government issued specifications so companies could create their own software, Carter said she doesn't see "a commercial market for this kind of software."

But several vendors do. Bottomline Technology, Inc. in Portsmouth, N.H., is offering a financial application module for $5,995 that was developed by subsidiary CertiSoft Solutions, Inc. It is an electronic data interchange module similar to the IRS offering but offers users more functionality. Denver-based enterprise software vendor J. D. Edwards & Co. is bundling the CertiSoft module in its financial application package.

Called EPIc-Enterprise, the software lets users gather data from their financial systems and compile it in Automated Clearing House (ACH) files, the proper form for the quarterly IRS filings. The ACH files are then sent electronically to the IRS, which debits or credits a company's bank account. The software can also cut an electronic check to the IRS.

Bottomline has a packaging deal with J. D. Edwards, but the EPIc-Enterprise software was designed to bolt on to most financial application packages, including ones from SAP AG, Oracle Corp. and PeopleSoft, Inc.

EXTRA FEATURES

A Bottomline spokeswoman said the software handles more than just the federal tax requirements, can compile a wide variety of electronic payment needs and requires less manual data entry than the IRS software.

National City Bank of Minneapolis bought the software and offers it to its corporate customers. About 25 companies use the system and pay the bank a service fee for the system. But Steve Ward, vice president of marketing for the $600 million bank, said it isn't pushing the product for tax payments.

"Right now we are suggesting they go with the more simple debit option from the IRS," Ward said.

OpenDoc

CONTINUED FROM PAGE 45

information architect at Cummins Engine Co. in Columbus, Ind., said he couldn't wait for IBM to get him the OpenDoc technology he needed, so he has given up and moved on to Java and JavaBeans. Until a few months ago, Bowser was one of the biggest user proponents of OpenDoc, saying it was a major focus in Cummins' technology strategy.

"Java has come along like a jet," said Bowser. "IBM was planning on moving OpenDoc to Windows, and they did. Two years ago, that would have been a fast move. Today, stuff comes out in two weeks ... and we couldn't wait."

Karen Boucher, an analyst at The Standish Group International, Inc. in Dennis, Mass., said users may not have to choose between OpenDoc and JavaBeans — not if negotiations between IBM, Apple Computer, Inc. and Sun go as expected. Boucher said the three companies are negotiating to integrate the two technologies to better battle Microsoft's rival ActiveX architecture (CW, Sept. 23). Neither Sun nor IBM has officially confirmed this plan, however.

JavaBeans is the architecture that links Java applets and allows them to communicate with and invoke one another. It was designed to speed information over the Internet and intranets. By contrast, OpenDoc is a more complex technology made to power desktop applications.

Linked together, JavaBeans and OpenDoc would be a formidable competitor to ActiveX, which runs on both the desktop and the Internet and has the advantage of being linked to Windows, observers said.

"If the negotiations work out, linking OpenDoc to Java, then OpenDoc will survive," Boucher said.

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Delta Airlines, TransQuest	Operational Control	400	40
Hewlett Packard	Industrial Control	55	23
Lucent	Network Management	200	15
NationsBank	Direct Banking	80	4
National Australia Bank	Foreign Exchange	80	6
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Sapient	Network Trafficking	280	5
Universal Oil Products	Refinery Design	450	2

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Regards,

Mark Jarvis

Mark Jarvis
Vice President, Oracle Server Technologies

A True Challenge for IT Managers

BY PETER KASTNER AND CHRISTOPHER STEVENS
ABERDEEN GROUP, INC.

Because of the radical changes brought about by the Internet, centuries-old basic business processes such as buying and selling are going to change dramatically. Both buyers and sellers will be demanding more information and better information, and will demand it faster than ever. This transformation — a true paradigm shift — will forever alter the way society operates. It will also have more than a slight change on the way IT is utilized.

But IT executives will find it difficult, to say the least, to align their IT infrastructure with the fast-evolving business practices pertaining to electronic commerce (EC). The Aberdeen Group hopes to make this alignment process easier with this article, which lists its best practices for EC initiatives.

Although many organizations think of EC as one monolithic business process, it may be easier to plan for EC by looking at two combinations of buyer and seller: business-to-business and business-to-consumer. (There is a third combination: consumer-to-consumer. The Internet will be the ultimate on-line classified ad page. Consumer-to-consumer EC will have a substantial impact on newspapers, but little effect on IT organizations.)

Business-to-business EC seeks to make the supply chain as efficient as possible.

BUSINESS-TO-BUSINESS:

Shortening the Supply Chain

Business-to-business EC looks at the wholesale side of goods and services. To build a product or service, a company buys raw materials and contracted

ILLUSTRATION BY GARRY NICHOLS/SIS

services. The end-customer can be another business or organization further along in what is called the supply chain.

Business-to-business EC seeks to make this supply chain as efficient as possible. One way of doing this is by creating a virtual corporation along the supply chain — a task that IT must perform and sustain. This process allows participants in the supply chain to exchange business documents such as invoices electronically (i.e., the established practice of EDI), while anticipating demand through the use of decision support systems (i.e., data warehousing).

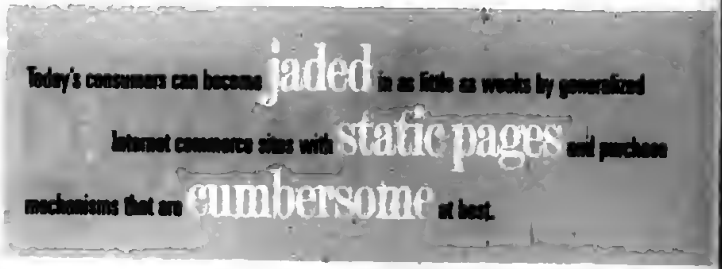
Electronic collaboration, in the form of E-mail and conferencing, has become a critical enabler of business-to-business EC and a vital part of the virtual corporation. In fact, the Internet provides an ideal technology base for streamlining the entire supply chain and facilitating the creation of vertical solutions for markets such as the automotive and petrochemical industries. And since a virtual corporation must harness internal resources too, business-to-business EC also requires an intranet for connecting employees and workgroups as well as making Internet connections to suppliers.

BUSINESS-TO-CONSUMER:

They Want It Their Way

The good news is that the virtual marketplace truly does open up new selling opportunities globally. But when it comes to business-to-consumer EC, the not-so-good news is that just banging out a sign on the Internet won't bring customers streaming into your store. In fact, today's consumers can become jaded very quickly — in weeks — by generalized Internet commerce sites with static pages, complex menu hierarchies and purchase mechanisms that are cumbersome at best.

To succeed in the virtual marketplace, a business will need to deliver "fine granularity" self-service to consumers.


Today's consumers can become jaded in as little as weeks by generalized
Internet commerce sites with static pages and purchase
mechanisms that are cumbersome at best.

This means keeping records about their purchasing patterns, such as garment size, preferred shipping methods, and promotions. It means publishing dynamic catalogs, tuned to a consumer's personal preferences. It also means providing a virtual storefront that appeals not only to the "MTV generation," which wants an exciting Internet commerce experience — with audio, motion and cool graphics — but also to consumers who prefer a more traditional look and feel. It may also mean providing Internet E-mail feedback and customer help-desk chat sessions, which can make the consumer feel more "connected" to a supplier.

EC ARCHITECTURE:

Build or Buy

According to Aberdeen research, a technology-architected approach to Internet-based EC is more likely to stand the tests of Internet time: to deal with rapidly evolving but presently imprecise technology such as distributed objects and to glue disparate production systems together. The two main principles governing architectural choices are flexibility and scalability — the ability to change the system frequently as a result of demand and to cope with success brought on by high volumes (not to mention the high volumes themselves).

Until very recently, the technology to build and maintain flexible and expandable EC systems was difficult to integrate and, as a result, not widely used. To many organizations, this dictated that they build their own EC infrastructure in-house, and in so doing incur the risks and costs of pioneering.

Going forward, Aberdeen Group recommends that IT organizations consider purchasing an integrated, architected solution for both business-to-business EC and business-to-consumer EC. By purchasing such a framework, IT organizations can minimize implementation risks, can get systems to market faster, and will benefit from the experience of suppliers, as well as support and training available from them.

Internet EC Technologies

Internet EC will remind many IT practitioners of the homily about "something old, something new." In databases, for instance, EC grafts new technology onto an existing base. And new technology such as payment authentication and encryption must be applied using the familiar rules of transaction processing in production-quality business systems.

In creating an EC infrastructure, IT must consider the following key Internet technologies:

- Security (authentication, encryption, firewalls, password control)
- Payment systems (credit card processing, third-party credit authorization, electronic cash, EDI)
- Distributed transaction processing (session management, deferred commit, multi-server transactions)
- Universal DBMS (add searchable new media to RDBMS)
- Storefront building (specialized application development tools)
- Collaboration (E-mail, workflow, document management, EDI)
- Development tool (4GL and CASE tools generating Java)
- Middleware (gateways, object request brokers, Common Gateway Interface replacements)

Conclusion

Aberdeen estimates that companies will invest more than $7 billion over the next three years on technology used for Internet-based EC systems. During that time, most companies engaged in business-to-consumer Internet-based commerce will roll out first- or second-generation EC systems . . . and will grab their fair share of the technological spotlight.

Business-to-business EC collaboration will be less visible. Strategies employed here will be aimed at making the supply chain more efficient, but companies will hide them behind the cloak of competitive advantage.

Technology change will be the hallmark of EC information technology for at least the next decade. That technology will be geared to handling Internet EC transaction volumes, which will show rapid growth, though perhaps not the overnight bonanza that many participants expect. (Only certain select areas will enjoy that type of gold rush.)

Aberdeen Group strongly recommends that IT practitioners architect their EC endeavors carefully, and consider whether to make or buy their core EC technology.

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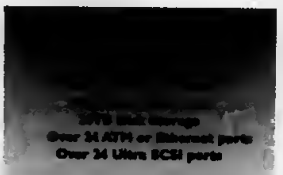
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EC Solutions Require A Partner Who Can Do It All

Businesses want partners who can deliver an integrated EC solution — not just Internet, messaging and electronic payment systems but the database, development tools and applications needed as well. And Oracle Corp. is the only company with the experience and technology to deliver the architecture, platform, services and applications needed to realize the full potential of EC.

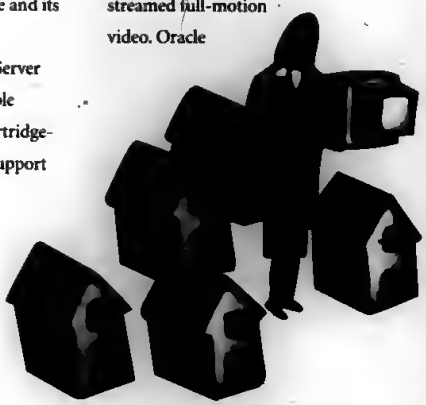
To support the Internet's evolution to secure transactions, Oracle has embraced Network Computing Architecture, which combines the reliable services of client/server, the scalable and reusable extensibility of objects and the ease of use of the Web to offer the only end-to-end, cross-platform infrastructure for developing and deploying object-based, network-centric applications.

Network Computing Architecture contains two critical components for Internet-based EC: Oracle WebServer and Oracle Universal Server. Oracle WebServer — the first scalable application server for the Internet — supports transactional and back-end-integrated EC applications. It can also accommodate transaction-enabled cartridges, such as merchant servers, which Oracle and its partners are rolling out.

At the heart of Oracle WebServer is Web Request Broker, a scalable application platform with a cartridge-based design that allows it to support new business functions.

Oracle Universal Server, by supporting applications that combine video, text and spatial data, along with traditional relational data, eliminates the need for specialized servers to snpport specific data types. And it can deliver this data to thousands of users over the Web.

Oracle offers more than just these key products to facilitate EC. The Oracle Video Option to Oracle Universal Server helps EC sites enhance a consumer's shopping experience by providing streamed full-motion video. Oracle



ConText Option provides text retrieval and classification technology, so enterprises can integrate large document databases with EC applications and give thousands of concurrent users fast access to text-based information. Oracle Spatial Data Option lets electronic retailers store, access and manipulate spatial data in an Oracle7 database so they can offer on-line locator services.

Payment and security

Businesses conducting EC must address payment, security and fulfillment issues. To offer electronic payment services on Web sites, businesses can use Oracle Payment Server, which processes monetary transactions over the Internet. Payment Server supports multiple, concurrent payment mechanisms (initially VeriFone, CyberCash and First Data).

When it comes to security, the challenge in EC is to ensure that people have easy access to the data they need but no access to information for which they are not authorized.

In an EC system, the database must enforce strong security. Oracle7's confidentiality and integrity is based on access control as provided by system privileges and object privileges, which can be encapsulated in business transactions.

However, many firms conducting business on the Internet kept customer data in a database that resides behind a firewall. In Oracle environments, this issue becomes one of enabling SQL*Net access through firewalls. Because Oracle supports two firewall architectures and licenses a SQL*Net application proxy free to a number of firewall vendors, many customers will be able to use their firewall of choice to support SQL*Net traffic.

Secure EC also requires the abilities to authenticate transaction principals, be they customers placing orders or the Web storefronts receiving them, and to provide proof of origin, i.e., that an order could have been placed only by a particular user or accepted by a particular vendor. Both needs can be met by the use of public key mechanisms for authentication and digital signatures. Oracle Security Server, bundled with WebServer 3.0, can generate public/private key pairs and issue (and revoke) these digital certificates.

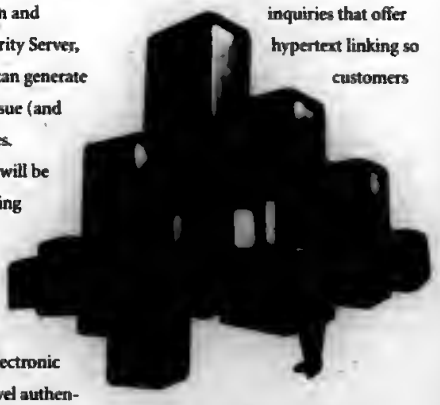
Using digital certificates, it will be possible to encrypt data traveling between Web browsers and servers on the Internet or an intranet. Oracle's Payment Server and Project Apollo merchant server add Secure Electronic Transaction (SET) message-level authentication and encryption. Data privacy between WebServer and Oracle7 is ensured by Oracle Advanced Networking Option, which provides data confidentiality and integrity via encryption.

Applications

Oracle supports an organization's business transactions with both customers and suppliers through two applications. Oracle Web Customers and Oracle Web Suppliers are part of the Oracle Applications for the Web family. Unlike vendors who put client/server applications on the Web by providing a Web interface to them, Oracle builds its applications specifically for the Web.

With Oracle Web Customers, businesses can place orders and access related information from a single vendor; can include Web transaction preferences for each of their customers and partners; and can link to other Web sites for up-to-the-minute information such as shipping details and catalogs.

'Oracle Web Customers includes self-service Customer Service inquiries that offer hypertext linking so customers



can create point-and-click sales orders and link to associated business documents (with the ability to navigate forward or backward) to find the status of transactions. Oracle Web Suppliers offers the same features to provide your suppliers with information they need to serve you better.

Project Apollo

Oracle is extending its expertise to solutions for conducting business-to-consumer EC over the Web with an Internet merchant server called Project Apollo. Project Apollo leverages the power of Network Computing Architecture, Oracle

Universal Server and WebServer to deliver performance for any size Internet commerce solution. Open APIs and interfaces allow seamless integration with commerce support infrastructures such as order entry, payment and shipping.

Getting them back

All Internet sites are created equal as far as location; none are closer or more convenient. This makes it imperative that businesses compel consumers to return to their Internet sites. The key is to give consumers the best shopping experience by accounting for factors such as performance; personalization; look and feel; incentives to purchase; and security.

People don't want to be kept waiting when browsing, selecting or paying for products in an electronic store. Performance depends on factors such as network traffic and bandwidth, the consumer's client machine, and modem speed. Scalability of the application, in terms of transaction processing speed, number of users supported and breadth of product line presented, is also vital.

Personalizing the shopping experience entices consumers to come back. By registering at a site as an account customer, consumers can record their preferred method of payment and interests.

Consider a site that offers a range of products. Joe, an amateur photographer, is only interested in electronics. The first page of the Internet store shows Joe its electronics department. When he goes there, he only sees photography products. By refining his preferences, he can show he is only interested in electronics relating to photography and costing $300 or less.

Like real stores, Internet stores must offer an attractive look and feel. They must also offer incentives to buy, such as coupons, special offers and discounts. They also need a mechanism that lets consumers accumulate coupons for future use — an electronic wallet where receipts and credit card details can also be kept. Stores can also establish agreements to offer vouchers for other Web services.

Electronic stores must also enable consumers to feel confident that their orders will be fulfilled and delivered in the timeframes indicated and that their credit card and other personal information will be secure during all transactions.

Project Apollo lets shoppers browse product sections and subsections with a browser interface, select products and drop them into a shopping cart. When they are finished, they go to the checkout stand to pay for the order. If a user logs out of Apollo or switches to another Web site without checking out, the items will still be in the cart when the user returns.

Administering Apollo

Two modules, Store Builder and Store Manager, make Project Apollo easy to set up, load content and administer. Wizards permit the configuring of merchant servers, including how they display products. HTML templates allow merchants to customize the look and feel of a store.

Project Apollo supports Profiles and Preferences. Profiles are built by tracking customer behavior and storing the information as data in Oracle Universal Server. Preferences refer to choices made by consumers regarding products, sections and coupons. Once these Preferences are defined, Project Apollo can be configured to provide dynamic shopping experiences.

All Internet sites are created equal as far as location; none are closer or more convenient.

Realtime sales tax calculation is a key facet of Internet commerce. Project Apollo provides this, taking into account the locations of both the buyer and seller. And by interfacing with Internet payment vendors, Project Apollo creates a solution for secure payment and credit card checking, validation and authorization.

Summary

Oracle Electronic Commerce supports real commerce functions with the first true business-critical application platform for the Web. This platform simplifies management of all types of information, and ensures that data is safely stored and securely delivered. And it scales to accommodate thousands of concurrent users. Oracle's Internet Services and Electronic Commerce Practice can help customers build EC applications. You can review Oracle's EC offerings at www.oracle.com. If you're ready to go forward, call (800) 633-1071, x11028.

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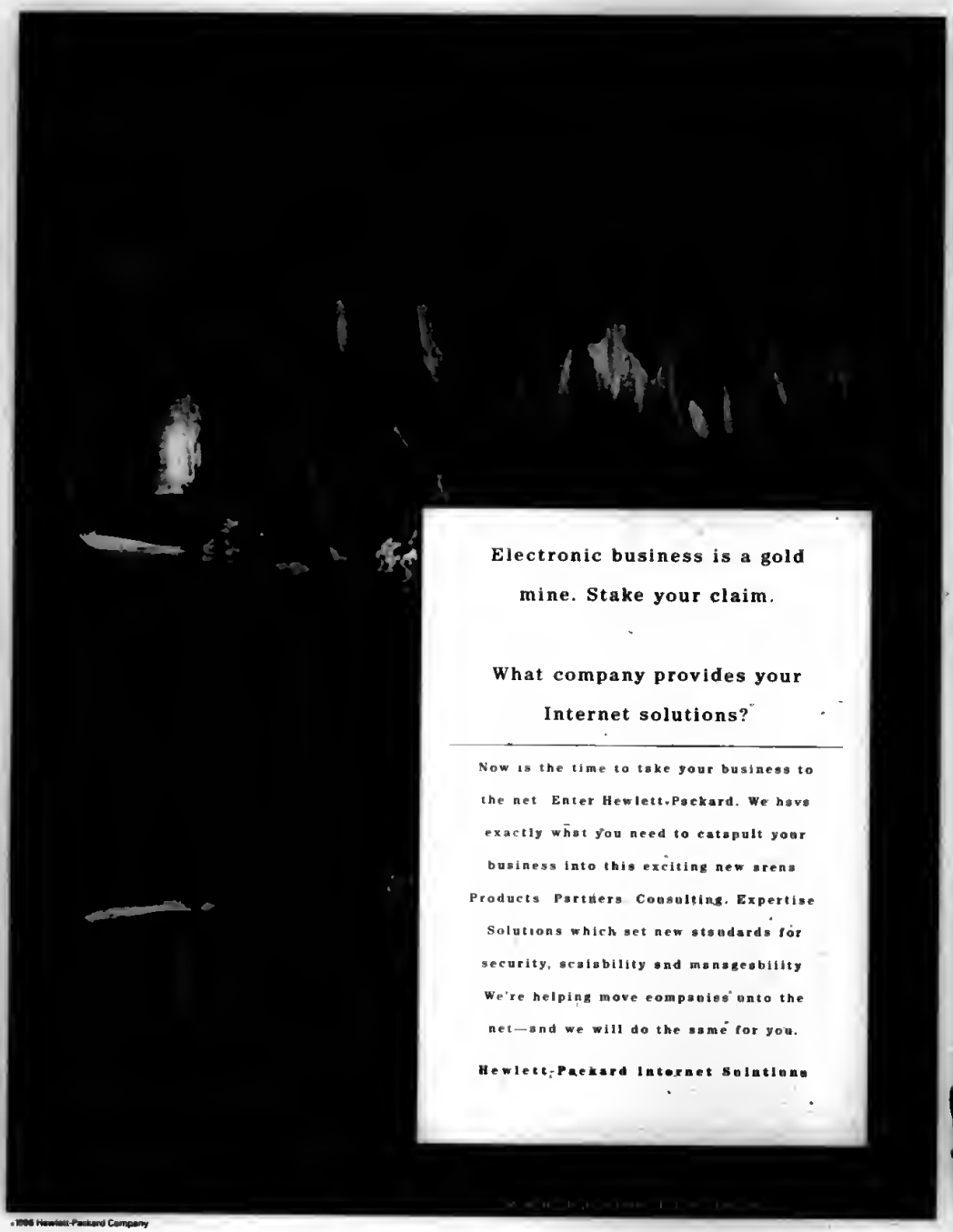

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Briefs

GOOD ENOUGH FOR GOVERNMENT WORK

Roughly 2,500 of the 5,000 ATM switches deployed to date are used by the U.S. federal government, according to CIMI Corp., a consulting and research firm in Voorhees, N.J., which tracks ATM networking.

The future of networking

▸ NT Server seen expanding market share in '97

By Laura DiDio

MARKETING MUSCLE and cost of ownership will be two of the most cogent forces shaping the network operating system market this year.

Users and analysts said they expect the momentum for Microsoft Corp.'s Windows NT Server to continue unabated — mainly at the expense of market leader Novell, Inc.'s NetWare, which still holds a commanding 55% to 60% market share, according to International Data Corp. (IDC), a market research firm in Framingham, Mass.

Windows NT Server — buoyed by its close links to the Microsoft Office suite of desktop applications and the BackOffice server suite — is steadily gaining and encroaching on Novell's market share. Windows

NT on rise, page 52

▸ Internetworking forecast: Hype continues

By Bob Wallace

ETHERNET SWITCHING this year will continue to spread across the nation. Rural areas will receive a shower of new remote access options. And the hype over Gigabit Ethernet and virtual LANs will remain stationary.

That's the internetworking industry forecast, according to forward-thinking users and analysts, who warned information systems managers to button up against the hype or end up stuck with immature products that aren't standard or interoperable.

Ethernet switching, which provides 10M bit/sec. of switched bandwidth to the desktop in place of a shared 10M bit/sec. pipe, has the brightest outlook of LAN switching options, according to the latest

Internetworking, page 52

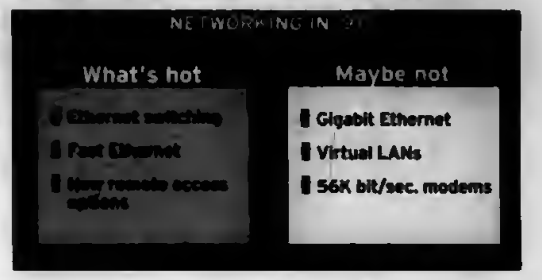
SERVER COSTS

Cost of managing network operating systems at LAN sites

	Cost per server	Cost per node
NetWare		
Windows NT Server		
Warp Server		

Base: 240 LAN administrators

Source: Business Research Group, Newton, Mass.



Router analyzer keeps reports flowing hourly

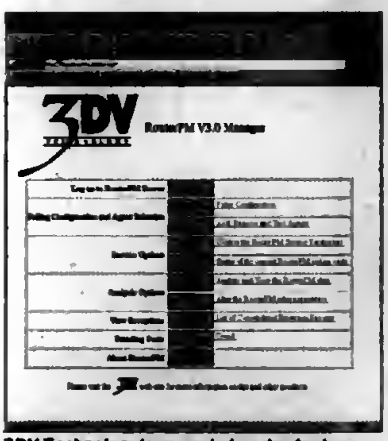
By Patrick Dryden

3DV TECHNOLOGY, INC. last week upgraded its RouterPM performance analysis tool to give managers more timely diagnostic information on networks using routers from Cisco Systems, Inc.

"Now our staff will be able to get information up to the current hour with all the diagnostic graphs," said Steve Tindall, technical specialist at Allegiance Healthcare Corp. in McGaw Park, Ill.

"Being closer to a problem than week-old summary reports is a big help for troubleshooting," Tindall said.

RouterPM software runs on Windows NT, continuously monitoring Cisco routers. It gathers performance statistics and checks them against stored performance profiles to detect inefficient operation and make rules-based suggestions for fixes — sort of a consultant in a box.



3DV Technology's upgraded router tool now provides complete diagnostics on the hour via the Web but only for Cisco models

RouterPM originally created only daily or weekly reports for periodic analysis and long-term trending. Version 3.0 was designed to diagnose routers hourly. That means it can track critical network performance trends so help desk staff have up-to-date reference and earlier warning of impending problems.

The update also completes steps taken last year in Version 2.5 to enable operation and basic reporting via the World Wide Web.

The new release also catches up to Cisco in the nuts and bolts department, improving its diagnoses by monitoring enhancements Cisco has recently made to its routers' memory pool, queues and interfaces, said Mike Vitagliano, president of 3DV Technology in Nashua, N.H.

RouterPM 3.0 requires Windows NT 4.0 on a Pentium-based PC.

Pricing for RouterPM ranges from $100 to $1,000 per router, depending on quantity in the network.

SOFTWARE SUITES

Workflow tied to document management

By Barb Cole

NEW SOFTWARE suites that combine workflow, document management and imaging are a welcome sight to users who have been trying to get these related — but typically separate — applications to work together.

Workflow, document management and imaging are complementary technologies in that they are often used together to automate paper business processes. But they are typically sold as stand-alone packages that don't interoperate well.

The Saros division of FileNet Corp. in Costa Mesa, Calif., this week will announce Discovery Suite, a bundle that combines Saros' Document Manager, FileNet's Ensemble workflow application and Watermark Software, Inc.'s imaging software. The integrated package tracks work-

Workflow, page 52

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Workflow

CONTINUED FROM PAGE 49

flow processes and images via a common document management engine. That lets users concentrate document access privileges and version control in one application.

Separately, PC Docs, Inc. in Burlington, Mass., which dominates the low-end document management space at which FileNet is aiming the Discovery Suite, recently shipped an upgrade of its Docs Open software that includes workflow and imaging capabilities.

"We really like the concept of an integrated suite," said Mike Atwood, vice president of operations and MIS at International Benefits Services Corp., a third-party insurance administrator in Fort Worth, Texas.

NICE AND TIDY

Discovery Suite will let the company, which already uses FileNet imaging and workflow components, tie all documents together in one document index, Atwood said.

He said the company toyed with the idea of integrating workflow and document imaging processes using Microsoft Corp.'s Visual Basic but decided the suite would save time and development costs.

"In the past, these products have been pretty closed, and it has been difficult to get them to work together," said a claims manager at an insurance company in the Southeast that uses FileNet's high-end workflow package and has pilot-tested some document management applications.

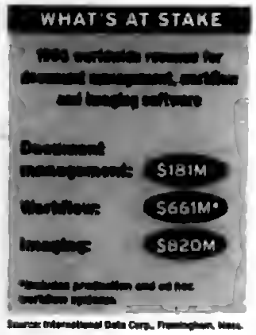
FileNet customers have been waiting for the suite since last year when the company went on a buying spree and purchased the document management system from Saros and the imaging piece from Watermark.

But some workflow veterans said Discovery Suite may not appeal to companies that have already deployed workflow applications.

"We've taken a different approach to [workflow]," said Vince Tabor, supervisor of information systems at the National Futures Association in Chicago.

Tabor said the commodities association is testing workflow development tools and intends to build in workflow as part of all its custom applications. "We don't think workflow is a standalone application," he said.

Discovery Suite will ship in the second quarter. It costs $495 per user.


WHAT'S AT STAKE
1996 worldwide revenue for document management, workflow and imaging software
Document management: $181M
Workflow: $661M*
Imaging: $820M
*Includes production and ad hoc workflow systems
Source: International Data Corp., Framingham, Mass.

Network operating systems forecast has NT Server on rise

CONTINUED FROM PAGE 49

NT Server now holds close to a 20% share of the worldwide network operating system installed base, according to IDC statistics.

"Our Windows-based desktop applications are designed to work best under Windows NT, and that fact pretty much dictates our [network operating system] plans," said Rod Samuel, a senior engineer at Lockheed Martin Tactical Aircraft Systems in Fort Worth, Texas.

The close coupling of Microsoft application and network operating system software is a two-edged sword, one information systems manager at a large insurance company in the South said.

"[Integration] between software suites makes life easier from a management standpoint, but competition is healthy," he said. "We do worry about what will happen if Microsoft comes to dominate the network operating system market the way it now controls the desktop. We'd be at their mercy even more than we are already."

IBM's OS/2 Warp Server and Banyan Systems, Inc.'s Vines are technically elegant solutions — and distant also-rans in the network operating system arena, according to IDC numbers. Warp Server has about 15% of the installed base, and Vines' share has shrunk to just 3%.

LONG-TERM COSTS

Cost of ownership will also be a large factor in users' network operating system purchasing and migration plans this year. Fully 85% of 240 network administrators surveyed by Business Research Group in Newton, Mass., said cost of ownership is a "critical concern" when acquiring or upgrading their network operating systems (see chart, page 49).

At large LAN sites, Warp Server had the lowest average cost of labor per end node. It also excelled in performance and speed, winning six of 10 categories, said Paul Johnson, an analyst at Business Research Group. Among large customers, NT Server was rated easiest to use for five tasks and was rated either first or second in nine out of 10 categories, he added.

"Novell may have the lead in market share, but it doesn't appear to have adapted to the changing needs of network administrators who are unsure of the future role of NetWare," Johnson said. Both he and Jon Oltsik, an analyst at Forrester Research, Inc. in Cambridge, Mass., likened Windows NT Server's momentum to that of a "runaway freight train."

But Oltsik also said no de facto winners have emerged in the intranet market yet. "Security, management, directory services and E-mail products from IBM/Lotus, Netscape, Sun, Microsoft, Novell and others will all have to compete for user attention," he said.

Internetworking outlook

CONTINUED FROM PAGE 49

market forecast by Dell'Oro Group, a research firm in Portola Valley, Calif.

"We're deploying thousands of switched Ethernet ports to the desktop and are budgeted to sustain this pace," said Chuck Rush, global network architect at McDonald's Corp. in Oakbrook Terrace, Ill. The fast-food giant has embraced Ethernet switching to support more demanding data applications.

Shipments of switched Ethernet ports will nearly triple from 2.21 million in the third quarter last year to 6.26 million in the same quarter this year, Dell'Oro Group projected.

And shipments of Asynchronous Transfer Mode (ATM) LAN ports will soar from 73,600 in the third quarter last year to 185,000 in the same quarter this year, the firm predicted.

"ATM is clearly our direction, largely because it's well-established and far more mature interoperability-wise than Gigabit Ethernet," Rush said.

No standards exist yet for Gigabit Ethernet, which runs at 1G bit/sec., though prestandard products are beginning to trickle out. Gigabit Ethernet is at the level of maturity ATM reached three years ago, Rush said.

Analysts agreed.

"We're still at least 12 months away from any type of mainstream interoperable products,"

> "I'm not holding my breath for a VLAN standard"
> Skip MacAskill, Gartner Group

cautioned Skip MacAskill, a senior research analyst at Gartner Group, Inc., a consulting and research firm in Stamford, Conn. "Users can expect vendors to continue hyping the technology in 1997."

Another heavily marketed technology — virtual LANs (VLAN) — has also failed to catch on. VLANs are logical rather than physical LANs that let users who need to work together do so regardless of their location.

"We haven't seen any significant movement with regard to standards for VLANs," MacAskill said. "[And] most users stay away from single-vendor approaches because it limits their flexibility."

Users are more excited about new and improved remote access options than they are about Gigabit Ethernet or VLANs.

"This will be the year when users will finally have a variety of options for serving remote sites — more than just [Integrated Services Digital Network] and [28.8K bit/sec.] modems," said Bob Currier, data communications director at Duke University in Durham, N.C. "We're particularly interested in DirecPC and will also take a good look at Digital Subscriber Link products this year."

Developed by Hughes Network Systems in Germantown, Md., DirecPC requires users to install a small satellite dish at their remote office or home to download data at up to 400K bit/sec. via satellite.

Other potential remote access hits this year include 56K bit/sec. modems and Digital Subscriber Link modems that let users download data at 7M bit/sec. and upload data at 640K bit/sec. over twisted-pair wire.

NEW PRODUCTS

SOFTTEK, INC. has introduced intranet fax server software called W.Fax.

According to the Trabuco Canyon, Calif., company, the software was designed to let users point, click and fax directly from their Netscape Communications Corp. Navigator browser.

Pricing starts at $5,500.

SoftTek
(714) 888-1181
www.softek.com

VIREO SOFTWARE has announced VtoolsD 2.04, which eliminates the need for Microsoft Corp.'s Device Driver Kit by including enhanced support for debugging drivers and by shipping a copy of Microsoft's WDEB386 debugger with every tool kit.

According to the Acton, Mass., firm, the upgrade provides support for added hardware interfaces and communications drivers, which simplify the process of building virtual device drivers for Windows 95.

The cost is $495 per seat.

Vireo Software
(508) 264-9300
www.vireo.com

TELEBYTE TECHNOLOGY, INC. has introduced Model 279 Single-Mode to Multi-Mode Fiber Optic Converter to provide long-distance transmission of fiber-optic signals.

According to the Greenlawn, N.Y., company, the converter can be used in systems with nulls in their frequency response; that is often the case in master/slave polling networks.

The converter costs $775.

Telebyte Technology
(800) 835-3298
www.telebyteusa.com

The Internet

The World Wide Web • Intranets • Online Services

Briefs

[redacted]

What's your firewall budget?

- Less than $25,000
- $25,000 to $49,000
- $50,000 to $99,000
- $100,000 to $249,000
- $250,000 or more

Base: 670 members of the New York-based Technology Managers Forum user group

[redacted]

The work of SATAN

▶ *Use of 'attack scanner' to probe security of 'net hosts draws fire*

By Gary H. Anthes

WHEN TWO computer security researchers unveiled a powerful network "attack scanner" called SATAN nearly two years ago, critics loudly complained that it would become just another item in hackers' tool kits.

And when Dan Farmer, co-developer of SATAN, last month used the diagnostic tool to surreptitiously probe more than 2,000 Internet hosts, criticism bubbled up again.

Farmer used SATAN, or Security Analysis Tool for Auditing Networks, in a research project to assess the security of major government and commercial World Wide Web servers. He found that nearly two-thirds were vulnerable to penetration by hackers (CW, Jan. 6).

Such penetration would enable an intruder to read or destroy files on the Web server and perhaps gain access to other hosts on the network. Farmer's findings are posted at his Web site, www.trouble.org.

"I think SATAN is seen as a good tool," Farmer told *Computerworld* last week. "System crackers were always disgusted by its high [hardware] requirements and that it didn't break in to systems or keep up with the latest bugs. But that was never its point."

SITES SAFEGUARDED

Farmer said he was careful not to exploit the security flaws he found and to safeguard the identity of the sites probed. Nevertheless, some computer security experts said he erred in not getting permission from Web site managers.

"Banging on someone's site without getting permission first is inappropriate," said Eugene Spafford, a computer security expert at Purdue University in West Lafayette, Ind., and one of Farmer's former computer science professors.

Farmer, who lost his job at Silicon Graphics, Inc. because of his distribution of SATAN, seemed to anticipate the criticism. In his report on the probes, he wrote, "Performing an unauthorized technical survey that solicits details about remote hosts or sites, while not illegal, has never been explicitly condoned. ... I had a very large amount of curiosity but a very limited amount of time and, since I viewed the project as a

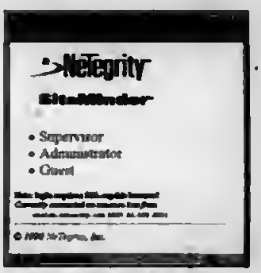
SATAN, page 58

Tightening internal security

By Charles Babcock

FIREWALLS SECURE the perimeter, but when it comes to controlling access to internal client/server systems — and sensitive business applications — the information systems manager often finds little outside assistance. That appears about to change.

NeTegrity, Inc. in Waltham, Mass., next month will offer Release 1.0 of SiteMinder, a system that concentrates security controls on a central server and uses a common security protocol to communicate with a variety of firewalls.



NeTegrity's SiteMinder lets remote users log on once to access all systems

USER RECOGNITION

NeTegrity deploys a security protocol called Remote Authentication Dial-In User Service (RADIUS). The protocol allows SiteMinder to communicate with firewalls of various stripes, providing a central point for user authentication. With RADIUS, a central server can recognize remote users regardless of their locations.

IS currently controls access to individual systems by requiring users to log in to each application or to the operating system of the server that runs the application. But those requirements have to be built in to each system. They force users to remember passwords for each resource they want to access.

Tightening security, page 58

Coming soon to a desktop near you

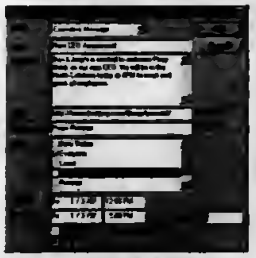
▶ *Software lets firms broadcast information to employees over intranets*

By Mitch Wagner

WAYFARER COMMUNICATIONS, Inc. today plans to announce software designed to let companies instantaneously broadcast information to their employees over corporate intranets.

Code-named Magnets, the software allows companies to send corporate intranets messages that appear as screen savers or in a small on-screen window that pops up on employees' desktops. The updates contain text information, graphics and links to World Wide Web pages on the Internet or to pages on the company intranet.

"We want to push the data right in our employees' faces. We want to be able to contact everybody in the company," said



Wayfarer's Magnets lets firms send messages that appear on employees' desktops as screen savers

Mitch Hadley, vice president of the Strategic Technology Group at NationsBank Corp. in Charlotte, N.C., which is testing the software.

The software from Wayfarer, in Mountain View, Calif., is similar to a popular Internet application from PointCast, Inc. in Cupertino, Calif., which also broadcasts news to desktops. But the Wayfarer application was designed for companies primarily interested in getting out their own information to employees and keeping that information feed under tight corporate control.

Magnets runs almost entirely within a company's firewall and puts out mostly corporate-authored information, with a small amount of business news from the Reuter, PR Newswire and PC Quote business information services.

PointCast, by contrast, uses the Internet to broadcast news

Broadcast, page 58

The Internet

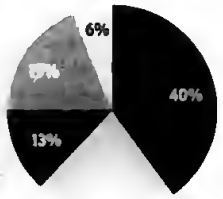
The World Wide Web • Intranets • Online Services

Briefs

Individual service

Individual, Inc. in Burlington, Mass., last week introduced a remote hosting service that officials said will reduce or eliminate the need for in-house support for its First Intranet news service, which delivers custom news feeds from more than 700 sources to desktops across an intranet. The nearly 200 companies that use the service now must maintain a news database and often additional server hardware and software. Individual's new First Intranet Server program transfers that maintenance to a central, remote site managed by Individual.

What's your firewall budget?



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Source: Computerworld's Information Management Group, Framingham, Mass.

PointCast expands

PointCast, Inc. in Cupertino, Calif., last week announced immediate availability of six new information providers on its application that broadcasts news in real time over the 'net. The new channels are *The Miami Herald*, Cable News Network, CNNfn, *Wired* magazine, Philadelphia Online and the *Chicago Tribune*. The new version of the service also supports America Online, Inc.'s dial-up software. The software client is available free to users at www.pointcast.com. Current PointCast subscribers will receive the upgrade automatically over the Internet.

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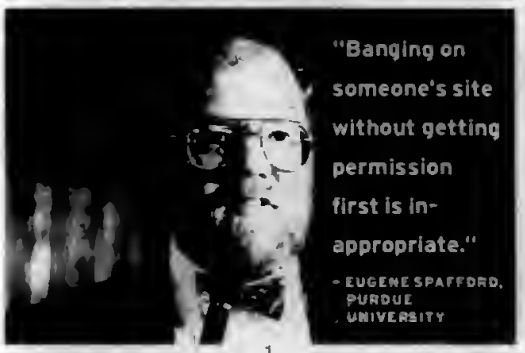

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SATAN, Page 59

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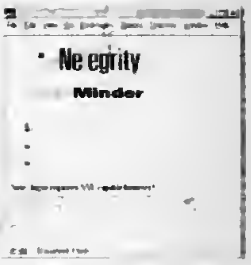

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IDC INSIGHT

Successfully Migrating

Corporate America is fast embracing Windows NT workstation for its desktop computing as it seeks a true multitasking, robust, 32-bit OS with reliability, security, and high performance. The Pentium Pro, offering superior speed and performance, is far and away the preferred platform for NT. These were among the key findings of IDC's recent global survey of 1,500 corporate enthusiastic NT adopters and active evaluators.

International Data Corporation (IDC), the world's leading information technology (IT) research firm, recently surveyed 1,500 medium-sized and large corporations around the world about their advanced desktop PC usage and plans via in-depth telephone interviews. Primarily, the research analyzed how corporations are currently using and adopting advanced Windows NT/Pentium Pro systems and what users found as key drivers and constraints. The study focused on advanced adoption so that organizations adopting less than 10% NT systems among their total systems, within the next two years, were excluded from the survey.

The market momentum for NT/Pentium Pro systems will intensify over the next 3–18 months, especially among U.S. corporations. Key drivers for this upward migration include the accelerated price/performance improvements of the Pentium Pro; the increasing availability of 32-bit applications; and recent release and success of Windows NT Workstation 4.0. IDC predicts 1998 to be the pivotal cross-over year when U.S. Pentium Pro Processor PC U.S. sales will exceed Pentium Processor PCs overall, and when NT will surpass Windows 95 on desktops in large corporations.

Key Advanced PC Study Findings

- By YE 1997, half said at least 50% of new PC purchases will be Pentium Pros.
- Corporate user plans by late 1997 include the following:
  - 150% increase in Windows NT
  - 50% decrease in Windows 3.X
  - 50% increase in Windows 95
- Within two years, the majority of internal application development will be 32-bit.
- Reliability, security, and performance are top reasons for choosing NT over Windows 95.
- Twenty-five percent of respondents will gradually roll out NT company-wide; 50% will roll out NT selectively.
- Key NT applications are general office, software development, technical/engineering, customized business, and multimedia.
- Performance and speed are top benefits of running NT on Pentium Pro PCs.
- Cost, hardware requirements, and incompatibility with existing software/peripherals key barriers to adoption.

Why Upgrade to Advanced PCs?

Corporate PC users are constantly seeking better CPU performance, more memory, faster data access times, and more powerful OS and application suites. In the late 1990s, technology continues to accelerate with more intensive requirements due to the increase in the size of applications and graphics-intensive files; expanded multimedia data types (color images, audio, and full-motion video); the inclusion of more software (Web browsers, utilities); and the constant IT mandates to cut costs and improve productivity. In addition, the tremendous growth in the Internet, Web, and corporate intranets is bringing ever-greater amounts of data to the desktop.

Recent and unprecedented price/performance improvements in advanced PC systems have whetted organizations' appetites. IDC PC pricing research indicates the cost of Pentium Pro systems will decline a full one-third to nearly half (or 33–47%) from the beginning to the end of 1996, depending on chip speed. As an industry example, consider the advanced desktop offerings in late 1994 vs. late 1996 from AST Computer. AST's high-end brand series has dropped in price by more than one-third, from about $4,300 to about $2,850 in estimated street price, while the overall performance offering has more than doubled. In short, there has never been a time in which corporations have needed advanced desktop PCs more, nor a time in which cost justification for upgrading has been stronger for the business enterprise.

Pentium Pro—Platform for and to the Future

The Pentium Pro, Intel's sixth generation microprocessor family, released in late 1995, was specifically designed to optimize the performance of 32-bit code while maintaining backward compatibility with previous x86 code. In essence, the chip is a bridge between today's world, which predominantly uses 16-bit OS (Windows 3.X) and applications, and the emerging world of 32-bit OS (NT, Windows 95) and applications, which is fast becoming the industry desktop standard. The Pentium Pro also offers unparalleled speed and performance through its superscalar and superpipeline design; Intel's "Dynamic Execution," and its L2 "cache on-board" dual-chip module.

As prices further decline, IDC predicts that demand for Pentium Pro PCs will increase significantly, especially in the corporate environment. Current street prices for NT/Pentium Pro systems have now fallen to less than $3,000—within the range of most corporate IT budgets. Accelerating price competition and expanded product selection will continue through 1997, which will further fuel the market. IDC anticipates Pentium shipments will peak in 1996, and the Pro, with 15 million units, will surpass Pentium sales (13.9 million units) as the dominant PC platform in the total U.S. market by 1998 (see Figure 1).

The Corporate Move to Windows NT

Migration to the 32-bit desktop enables true multitasking, improved stability, virtual memory, multiprocessing, and robustness. More than half (53%) of those IDC surveyed currently do 32-bit application development. Key drivers of 32-bit adoption cited by the IDC user base included new application availability, price declines, performance gains, and the success of NT

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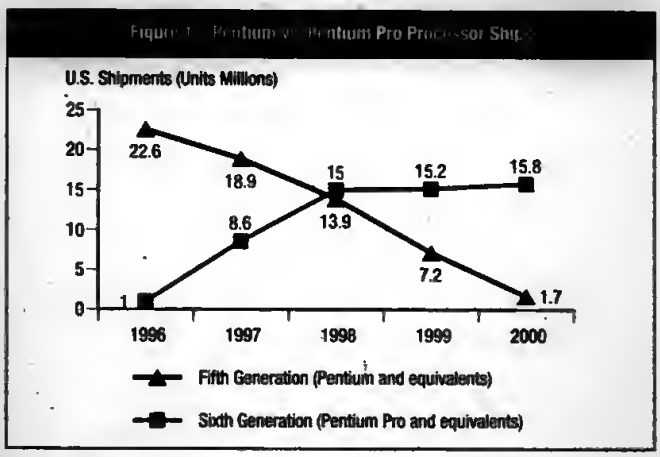


4.0. Within two years, three-quarters of all internal PC applicaoon development will be 32-bit.

Again, IDC uset research bears out corporate America's preference of Windows NT over Windows 95 or any other OS. Corporate users surveyed included in their 12-month plans a 150% increase in the use of Windows NT. They saw a decrease of Windows 3.X or Windows for Workgroups use by about 50% and an increase of Windows 95 by only 50%. Users cited reliability, security, performance, and robustness, in that order, as the most important reasons for choosing Windows NT over Windows 95. The primary departmeots driving advanced desktop computer system purchases among IDC respondents are MIS/DP, engineering, and R&D-traditional leading technologists, as might be expected. Somewhat surprising, are the current applications users identified running under NT such as general office automation packages (word processing, e-mail, spreadsheets) or today's geoeral mainstream desktop applications (see Figure 2).

Among corporations polled, the Pentium Pro was also the preferred platform to run NT. Fifty percent of respondents stated that at least half of all their oew PC purchases will be Pentium Pro systems by the end of 1997.

The Call to Action

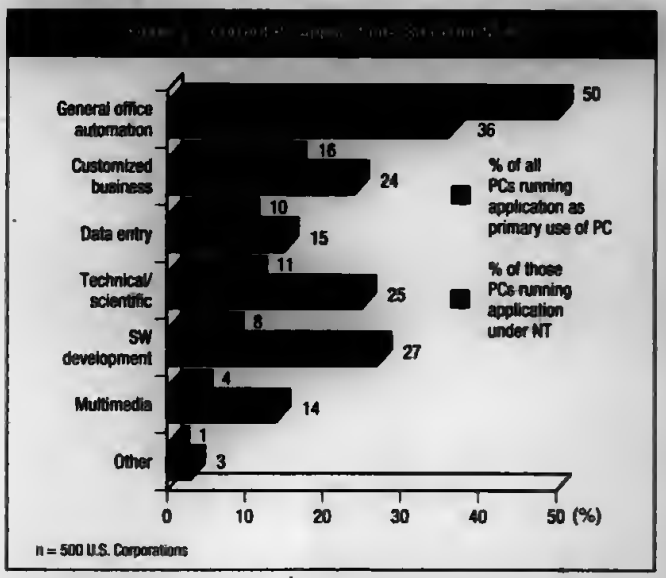
The decision of when and how to upgrade an IT infrastructure is difficult and complex. Hesitating can be even more hazardous, possibly leading to forfeited opportunity costs and lost productivity. As we approach 1997, it is clear that the U.S. corporate migratioo process to NT/Pentium Pro PCs is far beyond initial assessments.

Perhaps the only thing as important as choosing the right advanced PC is choosing the right vendor partner behind it. The top criterioo among the survey respondents were price/value and technical support. IDC recommends users to look for PC vendors that push the price performance ratios and offer the most complete total value package. Closely examine what prospective vendors include in:

- Hardware (components, configurations, investment protectiot);
- Cost of ownership (virus protection, data and system management, real time diagnostics);
- Productivity enhancement (Internet/intranet, utilities);
- Vendor viability;
- Product quality and price/performance.

IDC predicts that 1998 will be the pivotal cross-over year when Pentium Pro outstrips Pentium U.S. sales overall, and NT surpasses Windows 95 on desktops within large corporations.

Given its total value, performance benefits, and headroom, the time for serious coosideration of NT is here. The collective experience and insights of 1,500 corporate users—senior IT managers already in upward PC migratioo, can greatly benefit an organization's information technology design and planning.



This insight was written independently by IDC and sponsored by AST Computer. For a complimentary copy of IDC's full White Paper on migrating to Next Generation PCs (Asian, European or U.S. versions available), please call AST at 1-800-447-0023 x 100 or check the AST Web site at http://www.ast.com

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The guy who brought in the $10,000,000 client

The guy who chose the AST Bravo computers
with Pentium Pro processors and Windows NT

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Tightening internal security

CONTINUED FROM PAGE 53

Using the RADIUS protocol, SiteMinder allows remote users to log in once and gain access to all systems they are normally authorized to use, NeTegrity officials said.

That kind of authorization is a strength of the SiteMinder technology, said Traver Kennedy, wide-area network research director at Aberdeen Group, Inc. in Boston. Once a user is authenticated, he then can be given privileges down to the level of a specific departmental database or client/server application on a LAN, Kennedy said.

"When teamed up with other measures like smart-card technology, SiteMinder takes us past passwords into the context of how we do things," such as which user typically uses a given resource, Kennedy said.

NeTegrity has formed a joint venture with an Israeli smart-card supplier, Encotone Ltd. Smart cards, which are considered more secure than plain user names and passwords, generate numbers that are recognized by the SiteMinder server when entered with a valid user ID.

SiteMinder costs $20 to $50 per seat, depending on the number of users. Users of the beta product were sensitive about disclosing their security arrangements and declined to respond to inquiries.

"NeTegrity represents real progress, but it's not the whole solution," said Chris Byrnes, a vice president at Meta Group, Inc. in Reston, Va. "You still have to modify every application."

SiteMinder requires each application or system to be programmed to recognize a token or authorization signal from the SiteMinder server to permit individual access. NeTegrity obtained its token system through a pact with Vasco Data Security, Inc. in Lombard, Ill.

Byrnes and Kennedy said SiteMinder's advantages include its ability to concentrate user names and passwords in a central database on one server. Security administration is easier to implement there, and NeTegrity offers finer grades of privilege to cover controls of client/server systems.

RADIUS was invented by Livingston Enterprises, Inc. in Pleasanton, Calif., and is used by several firewall vendors, including Check Point Software Technologies Ltd. in Redwood City, Calif.

IBM, with its SecureWay Server, and Hewlett-Packard Co., with its Praesidium system, also offer centralized servers for security administration. But they require related security products from the same vendor. Praesidium, for example, functions as an extension of HP's network management system, OpenView.

Security Dynamics, Inc. in Cambridge, Mass., offers a similar server system for use with its own random-number-generating smart cards, but its Ace Server is priced at $25,000, said Rik Farrow, a security consultant in Sedona, Ariz.

NEW PRODUCTS

ORNETIX NETWORK PRODUCTS has launched a World Wide Web site to help network administrators and others configure and price a CD-ROM server or jukebox product that is customized for their networks.

The San Jose, Calif., company said visitors to www.cd-server.com can review the benefits of CD-servers and jukeboxes from many manufacturers. Visitors also can fill out a form noting the specific type of system they plan to use. Ornetix will forward the form to the hardware manufacturers for a price quote.

The service is free.

Ornetix Network Products
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www.ornetix.com

IMAGEMIND SOFTWARE, INC. has announced Video Express Mail, which allows audio and video messages to be created and played by popular electronic-mail programs.

According to the Salt Lake City company, Video Express Mail audio and video files are embedded in an E-mail message, not sent as an attachment. There is no limit to the amount or size of media that can be sent or received because received files don't need to be stored. Video Express Mail may be used on intranets and high-bandwidth Internet connections.

Video Express Mail costs $79.95.

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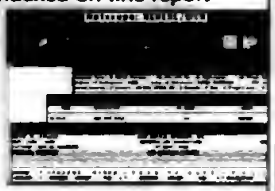

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CONTINUED FROM PAGE 53

from *The New York Times*, Cable News Network and other national and local news sources. Corporate users can also buy a server version that lets them add their own information streams for employees and business partners.

Hadley said his company prefers Wayfarer to PointCast because NationsBank wants to control the content employees receive. PointCast's use of advertising was also a strike against it. People tune out ads wherever they see them — on billboards, television or their computer screens — and that means they would tune out PointCast, Hadley said.

"You don't register it once you've gotten over the novelty of it. It's just more motion in your cube," he said.

Other companies with push-oriented technology include Marimba, Inc. in Palo Alto, Calif., and BackWeb Technologies in San Jose, Calif. [CW, Jan. 6].

To start the Wayfarer software, users install it on a Windows NT server, fill out some configuration forms and type in the information they want to broadcast to users in plain text without using Hypertext Markup Language coding. Administrators and information authors can define which individuals and groups receive particular broadcasts.

EASY TO USE

Ease of administration should be a strong selling point, said analyst David Smith at Gartner Group, Inc. in Stamford, Conn. "It's actual end-user technology," he said. "It can be installed by a business manager, a department person, as opposed to a developer."

Wayfarer expects to price the software at less than $50 per desktop. Final pricing and a product name hadn't been set as of last week.

The client software runs on all Windows versions, and a Macintosh version is due by June. A Sun Microsystems, Inc. Solaris version of the server is due by March.

SATAN probes sites

CONTINUED FROM PAGE 53

cultural and philosophical effort and not a legal one, I decided to risk censure, loss of trust, and the general ire of the 'net by simply doing it."

But some experts came to Farmer's defense. "There are no ethical problems in what Farmer did," said William H. Murray, an information security consultant at Deloitte & Touche. "He was looking at public systems using publicly available software, and he reported what he found.

"Farmer took a lot of heat over the development of SATAN," Murray added. "But SATAN is a useful tool. As auditors, we have to have tools that do exactly what SATAN does."

"Farmer and I agree on this, although a great number of people disagree," said Peter Tippett, president of the National Computer Security Association in Carlisle, Pa.

Tippett compared Farmer's action with a person walking down the street testing doors to see if they are locked. That is acceptable if it is done by a trusted party such as a police officer with legitimate security objectives, but it isn't if it is done by some kid on the street, he said.

But Christopher Klaus, CEO of Internet Security Systems, Inc. in Atlanta, said he wasn't persuaded by the argument that the acceptability of anonymous systems probes depends on who is performing them. "It's the same thing, and it still sets a bad precedent," he said. "It's hard to say, 'Hey, it's OK for this person to go around checking security but not OK for someone else to do it.'"

Klaus' company sells the Internet Security Scanner (ISS), which is similar to SATAN. Unlike SATAN, which is unrestricted freeware, ISS is licensed with the customer's network addresses embedded in the software. The product won't work if the customer attempts to probe someone else's network, Klaus said.

Briefs

Search aims at utilities

The Electric Power Research Institute, a research and development organization for the electricity industry, has established a business agreement with Oracle Corp. to jointly develop new information technology products for the industry. [illegible] opportunities for the [illegible] Alto, Calif.-based organization include helping [illegible] utility customers with business processes to conduct service transactions through the Internet.

HACKERS WANTED

RSA Data Security is running a contest Jan. 28 – 31 to decipher encrypted messages on the Internet. The Redwood City, Calif., company said it wants the event "to quantify the security offered by the government-endorsed Data Encryption Standard (DES)." RSA expects contestants will demonstrate that DES, a 20-year-old, 56-bit key standard, is vulnerable and needs upgrading. Rules of the contest, which has a $10,000 first prize, will be posted at RSA's Web site, www.rsa.com.

Packaged evaluations

Meta Group, Inc., a market research firm in Stamford, Conn., has introduced three evaluation kits for manufacturing companies as part of its Software Product Expertise service. Packages covered in the kits include Baan Co.'s Baan IV, Oracle Corp.'s Oracle Applications and SAP America, Inc.'s R/3 software. Each kit costs $5,000. The entire service is available for $20,000.

Boat hires Unisys

Bass Ventures has awarded Unisys Corp. a $14.8 million contract to install its Aquanta servers at Bass' 2,800 pubs and restaurants across the U.K. [illegible] systems will support [illegible] and customer service [illegible] planned by [illegible] Unisys is installing [illegible] servers per week and [illegible] to complete the project by September.

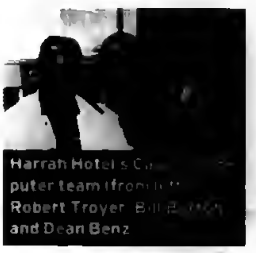
Solid plans keep IS high and dry

▸ *Reno, Nev., companies save data from flood*

By Justin Hibbard

NOTHING PUTS a disaster recovery plan to the test quite like a computer room filled waist-deep with water.

That was the test businesses in Reno, Nev., faced two weeks ago when nearly four feet of water overflowed from the Truckee River and sloshed through the city's downtown area.



Harrah Hotel's Co[illegible] puter team (from [illegible] Robert Troyer, Bill [illegible] and Dean Benz

Nevertheless, information systems departments at two of the city's biggest companies reported minimal damage and no loss of data thanks to sound disaster recovery plans carried out by well-trained personnel.

At The Hampton Inn, water gushed into a basement where communications hardware sat on a rack and transmitted critical reservations data. But the equipment stayed dry and functional because IS staffers had planned ahead.

"We raised all our equipment in our racks in the basement high enough to where the water was going to blow out the electrical circuits [in the building] before it reached the [computer] equipment," said Robert Troyer, lead computer operator at Harrah's Hotel Casino, which shares communications equipment with The Hampton Inn.

Moving the hardware was one of the first steps in a comprehensive disaster recovery plan the company devised two years ago when it installed new Windows NT servers that called for updated recovery procedures.

"We did a major overhaul of [our old plan] when we realized it was just covering a couple of AS/400s," Troyer said.

Disaster recovery, page 60

PHOTOS BY JIM MARK COSTIN

Casino employees sandbag to try to prevent extensive flood damage. (Inset) Flooding in downtown Reno near Harrah's.

• Mergers, acquisitions to continue in industry

IT to be driving force in banking

By Thomas Hoffman

U.S. BANKS raked in record profits in the past three years as interest rates were held down and the economy continued to expand.

But if the economy stumbles this year, as many naysayers predict, then technological sophistication will help separate the winners from the losers, according to the "1997 Banking Industry Outlook" from New York-based consulting group Deloitte & Touche.

The report projects that mergers and acquisitions, product differentiation and the effective use of alternative delivery channels will drive the banking industry this year.

Banks will need to use decision-support systems to analyze more effectively who their customers are and what products they want, said Frank Woosley, industry director of the financial services practice at Deloitte & Touche in Dallas.

"The traditional bank of the past sold every possible product through every possible channel, and the results were average,"

Technology, page 60

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BANKING ON IT

The most important business issues that banking decision-makers must grapple with to remain competitive in 1997:

1. **Merger economics**
2. **Third-party alliances**
3. **Retaining customer focus**

Source: Deloitte & Touche, New York

Parts, design repository to cut development time

By Julia King

IBM IS consolidating at least a dozen far-flung and gargantuan parts databases into a single enterprise repository of component, supplier and reusable design data.

Judging from pilot tests, the mega-project — which spans several design and manufacturing facilities worldwide — should advance IBM giant steps toward speeding products to market and reducing procurement costs.

"The whole idea is to get decisions made right the first time," which will compress product development time by as much as 70%, said Paul Mugge, director of development re-engineering.

Parts, page 60

Solid disaster recovery plans

CONTINUED FROM PAGE 59

The plan included procedures not only for bringing down the servers, but also for moving key departments to backup sites where critical business processes could continue with minimal interruption. After bringing down the network in a controlled fashion, the IS department set up a designated server for the reservations center to continue processing calls.

DRASTIC MEASURES

The situation was a little more dire at Reno Air, Inc., where Duffy Mees, director of information technology, had to drive a four-wheel drive truck through hood-high water to rescue equipment from the company's computer room.

Companies should test their disaster recovery plan with a comprehensive drill at least once per year, but few are that diligent.

– Frank DeLuca, Sungard Recovery Services

Mees and his staff hauled servers and networking hardware from the company's downtown headquarters to the Reno-Tahoe International Airport, where they set up operations in the lower concourse. When the concourse began to fill with water, they carried the hardware upstairs to a ticket counter, which soon flooded as well. Finally, they moved their equipment to the nearby Peppermill Hotel Casino.

Although the IS department at Reno Air lost a router and two PCs in the flood, staffers managed to save all their data.

"We learned some things," said Randy Reigal, systems engineer at the airline. "One of the servers that is kind of critical is in our headquarters. If it had been a bigger flood, we might not have been so lucky."

COUNTING UP THE COST

Officials at Reno Air and Harrah's said it may be months before they can calculate whether or how much the unavailability of information systems cost each company. A spokeswoman for the city of Reno said damage in Reno, Sparks and Washoe County was estimated at $33 million.

According to Frank DeLuca, senior director of client services at Sungard Recovery Services, Inc. in Wayne, Pa., companies should test their disaster recovery plan with a comprehensive drill at least once per year. But Reigal said few companies are that diligent.

"It's too expensive to do a full test as you would actually do it," Reigal said. "Most managers aren't prepared to do something that drastic."

But the cost of an untested plan may eventually outweigh the cost of a tested one, said Mark Mizuhara, general manager at Iron Mountain, Inc., a disaster recovery consultancy in Boston.

"There are economic ramifications if you don't have a good plan," Mizuhara said. "Rekeying data, accounting, transactions, banking — all of that can cost hundreds of thousands of dollars."

Parts, design repository

CONTINUED FROM PAGE 59

The new system is from Aspect Development, Inc. in Mountain View, Calif. IBM is piloting the Aspect software at several sites, including its RS/6000 division in Austin, Texas; its PC division in Raleigh, N.C.; and its AS/400 division in Rochester, Minn.

Before, IBM engineers in the Austin facility "had several different databases requiring different sign-ons and different passwords, and they didn't have a very good search engine," said Buddy Raines, product documentation and release manager.

As a result, Raines said, "we had a lot of people resorting to parts books and calling vendors asking them if they had an IBM part number," an activity that quickly bloats design time.

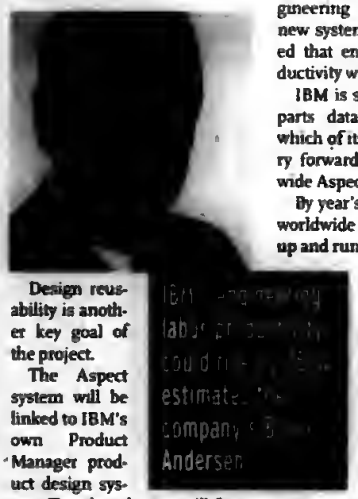
PARTS FROM ALL OVER

IBM officials, like those at most large electronics companies, realize the company is buying more parts from a variety of vendors, which increases costs, said Bruce Richardson, an analyst at Advanced Manufacturing Research, Inc. in Boston.

Yet it has been only within the past two years that packaged software to automate the parts procurement has become commercially available, he said.

As IBM and others gain more experience with the packages, Richardson predicted, manufacturers "will design and build new products around whole families of related commercial parts, rather than individual components." The result, he said, will be "maximum design reuse."

Under IBM's new system, all parts listed in the universal database are preapproved and purchased in volume from a select group of preferred IBM suppliers. That will shave months worth of management reviews from the design process, Mugge said.



Design reusability is another key goal of the project.

The Aspect system will be linked to IBM's own Product Manager product design system. Together, the two will function as a "concurrent engineering knowledge base," giving engineers a unified view of all previous designs and the parts that comprise them.

For example, engineers will be able to call up a particular electronic or mechanical assembly for reuse in a new design, said Bjorn Andersen, director of IBM's strategic business applications.

The Aspect system "will help us focus on common building blocks and avoid reinventing the wheel, which costs us precious time and money," Andersen said.

CHANGES BY THOUSANDS

In 1995 alone, IBM businesses racked up more than 30,000 engineering changes. Under the new system, Andersen estimated that engineering labor productivity will jump by 35%.

IBM is surveying its multiple parts databases and selecting which of its current parts to carry forward into the enterprisewide Aspect system.

By year's end, IBM engineers worldwide are scheduled to be up and running on the universal parts and design database.

IBM engineers also will have access to Aspect's online reference databases, which contain current information about parts from more than 650 electronic component vendors.

"This is a very powerful service because it gives us the ability to get a single view into [vendors'] latest parts offerings," Mugge said. Without it, "it would be a nightmare for our engineers because they would have to be knowledgeable of everything going on in the [parts] world," he said.

Technology sophistication driving force in banking

CONTINUED FROM PAGE 59

Woosley said. The bank of the future, he said, "will determine what products the customer wants and what channels they want to receive them through."

Other banks will excel by identifying lower-cost delivery channels that customers prefer. One of the leaders, Woosley said, has been San Francisco-based Wells Fargo Bank, which recognized last year that it could serve a large segment of its customers more cost-effectively by offering a wide range of banking services in supermarkets.

FOLLOW THE LEADER

Some banks that try to follow in Wells Fargo's footsteps without properly analyzing their customer sets will end up "in big trouble," said Woosley, who estimated that half of the 10,000 banks in the U.S. haven't even begun to explore alternative delivery channels, such as electronic home banking, to generate new revenue streams.

Banks "have come to the conclusion that 'brick and mortar' is not a delivery channel we can continue to emphasize," said Rick Sellers, president of the Huntington Service Co., the operations and technology arm of Huntington Bancshares, Inc. in Columbus, Ohio.

The recent merger and acquisition activity that has led to mega-marriages such as that of Chemical Banking Corp. and The Chase Manhattan Bank NA in 1995 will continue into this year, Woosley said. But future mega-mergers "are only going to have a ripple effect on the industry," he said.

That's because regulations that separated banks, insurance companies and brokerages continue to fall by the wayside. Woosley said he believes a cross-industry combination, such as the recently rumored and ill-fated Citicorp/American Express Co. union, will occur this year and reshape the banking landscape.

The mergers and acquisitions activity is also presenting a vexing set of staffing challenges to bank technology officers.

Austin Adams, executive vice president of automation and operations at First Union Corp. in Charlotte, N.C., said he is looking for information technology professionals who can adapt to the industry's rapidly changing culture and demonstrate "geographic flexibility" to move to a location where the bank has made an acquisition.

Woosley also said effective risk-management systems will have a significant bearing on how industry participants fare in a bear market because these systems will "have to push harder to find customers with good credit."

If the economy gets tough and banks are doing a poor job managing their risks "then that goes straight to your bottom line," he said.

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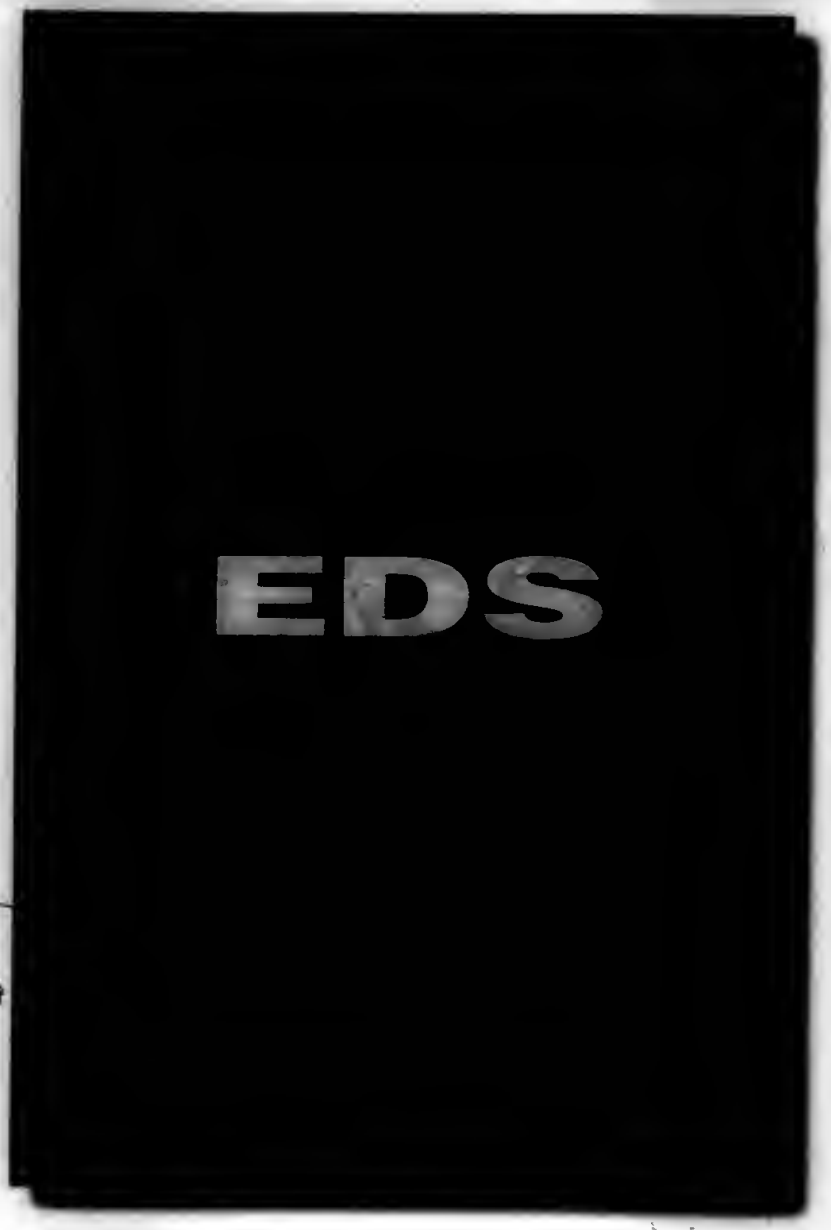

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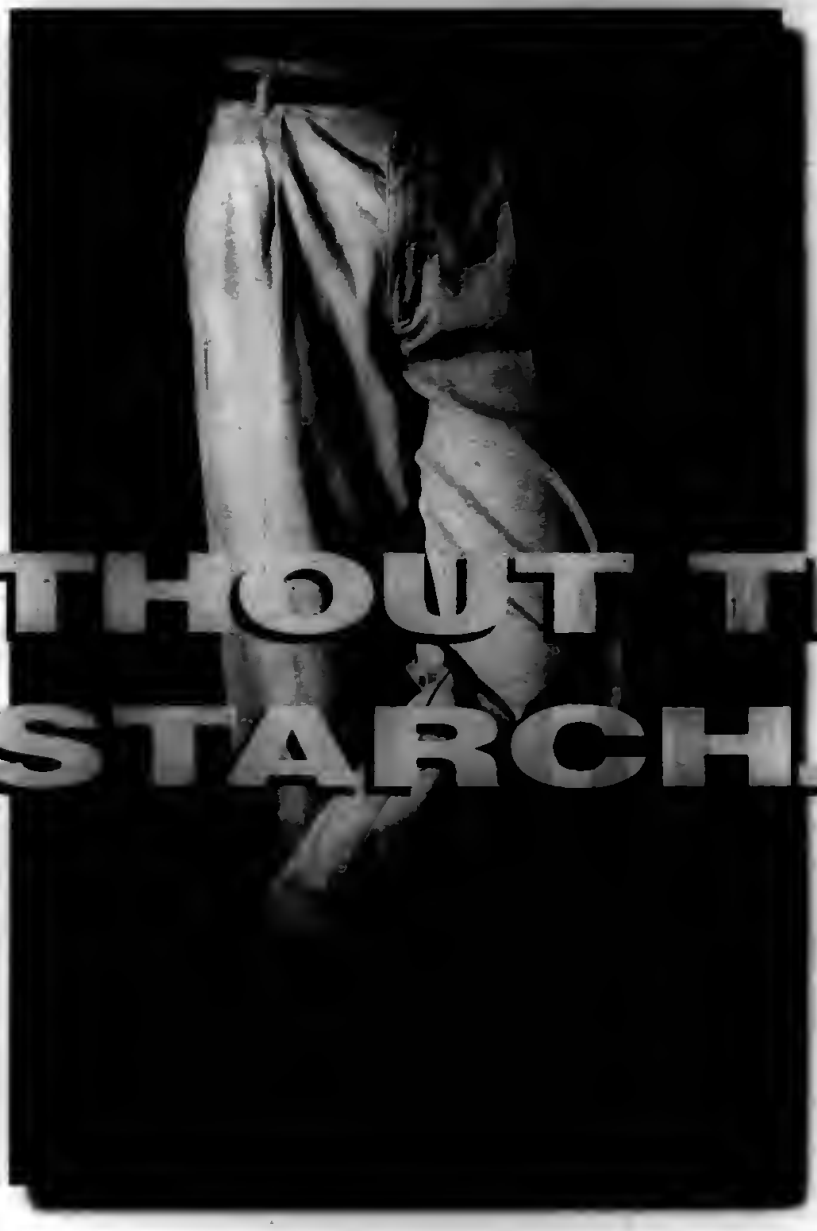

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Managing

Real costs of PCs
It takes effective management to hold down the costs of PCs, Paul Strassmann argues. Page 68

PEO WHO NEED PEO

IS managers have fallen into the skills gap – and they can't get up

CONTINUED FROM PAGE 3

piece; he knows that piece.' And among us, we come up with a solution.

"It gets tough. You have to be flexible in this environment. It's challenging and exciting, but sometimes you just want to say, 'Oh, my God! What am I doing here?' "

Managing by the seat of your pants is a fact of life in many start-up companies before there's sufficient time and money to get a staff in place.

But wait. Kruger is second vice president of systems infrastructure at Reliastar Financial Corp., a large, 111-year-old insurance company based in Minneapolis with a mature information technology department and ample budget to support technology.

So, what the heck's going on here?

The same thing that's going on virtually everywhere: A shortage of skilled professionals is driving IT managers to distraction. It's scrambling their priorities, their schedules, their job descriptions, their organizations and ultimately, their lives.

"There is a shortage of skills," says Tina Barber, vice president and chief information officer at Brooklyn Union Gas Co. in New York. "It goes beyond even what we thought a few years ago. We always thought the shortage would be in new high-tech areas — avant-garde software, [object-oriented programming], Internet, certain data warehousing and analysis skills. But also, because of reali-

ties of the year 2000 [date problem], there's a lack of qualified people with basic programming and systems skills and business knowledge as well."

"I think it's one of the biggest problems we face today," says Jim Stewart, vice president of information systems at Duff & Phelps Credit Rating Co. in Chicago.

Aside from a few high-tech enclaves, the skills gap is pervasive. "It seems to be a problem for everyone here in the Midwest," says Devan Shepherd, director of IS at the nonprofit National Marrow Donor Program in Minneapolis. "We've also tried recruiting from [the East and West Coasts] without much greater success."

SKILLS OVER SALARY

Salary, it seems, isn't the issue. "We're competitive with [the] marketplace," Shepherd says. "The skills are just not there."

The search for talent is taking over IS managers' lives. "I spend much more time recruiting than actually managing projects," Stewart says. "It's not as simple as putting an ad in the paper. There are so many ads they won't even notice."

Recruiting has become a 24-hour-per-day avocation. "If I'm at a party on the weekend and I hear somebody talking about computers, I keep my ears open," Shepherd says. "Eventually, I may ask if they want a job."

Many IS managers are roaming far afield in search of talent. Shepherd attends college career days throughout the country, giving lectures and manning a booth. He's also on the steering committee at a local university, trying to persuade the committee to include needed skills in the school's computer science curriculum.

Mary Gibbon travels so widely in search of skilled people that her secretary was unable to keep up with her. "My secretary was setting up all my trips, expenses and interviews," recalls Gibbon, assistant vice president of systems and programming at Standard Insurance Co. in Portland, Ore. "She couldn't handle the workload, so we had to spread that out to some of the department secretaries."

When IS managers aren't busy recruiting, they're revising job descriptions to make them more attractive to potential candidates. "People are very picky," Kruger says. "There's a lot of juggling to provide big enough jobs to get people to take them."

But they're not finding the skills they need. "We can't get enough people to get the job done," Stewart says. "You have to put projects and upgrades on [the] back burner."

OUTSIDERS DON'T UNDERSTAND

Adding to the pressure is that people outside IS often don't understand the problem. "One of the hardest things is explaining the problem to upper-level managers," Stewart says. "They say, 'What's so hard about finding a programmer?' "

"I had a situation where [customers] wanted to give us all this money to do 50% more next year," Barber says. "But I can't magically acquire 50% more people."

The gap is forcing managers to spend inordinate amounts of time on activities that normally would be peripheral. Barber, for example, frequently works with consultants and contracting firms on partnerships for technology transfer. "We work with them to find people with a particular set of skills to fill in where we don't have a skill and help us develop it in-house," she explains.

Shepherd has reorganized his department to involve people in the whole project life cycle rather than one task area. "It helps us make sure we're using all the talent we have to the best possible advantage," he says.

Mitch Chaney, CIO of SKF Seals, a manufacturer in King of Prussia, Pa., is going outside to fill in the gaps. "We're using outside contractors to supplement our skills base," he says. "And we're looking at the viability of outsourcing specific tasks."

Many managers find the only way to get the job done is to do it themselves. "I do more hands-on than I would typically do because I'm another body that can pitch in and help," Shepherd says.

But those kinds of activities take time away from what normally would be priorities. "I'm spending less time than I'd like on management, particularly of projects," Stewart says.

The only solution, they say: Expand the workweek. "Assessing where we are and what we should be doing next is something I almost always have to do at home or on the weekend," Gibbon says. "It just takes more time. I don't know anybody who [works] a 40-hour week."

MODERNIZATION CAN HURT

Few managers have been able to escape the consequences of the skills gap, but the rule of thumb seems to be that the more advanced your technology, the more you suffer.

Conversely, staying off the edge tends to lessen the pain. "We don't use bleeding-edge technology because we don't want to bleed," says Tim Vogel, systems development manager at KFC, Inc., in Louisville, Ky. "We're not a software company; we're a restaurant company. You don't need bleeding-edge technology to make restaurants more profitable."

Melymuka is a freelance writer in Duxbury, Mass.

COMPUTERWORLD

This week on @Computerworld, log on to an online discussion of how IS managers can deal with the skills gap (www.computerworld.com).

"When I find myself in a technology gap, I gather everyone around, and we put our strengths together and say, 'You know the tech piece; I know this piece; he knows that piece.' And among us, we come up with a solution."

– MICHAELEEN KRUGER, RELIASTER FINANCIAL

EASING THE PAIN

IT managers wrestling with the skills gap have come up with some creative solutions to lessen – if not erase – the pain

BE FLEXIBLE. Location need not be a make-or-break issue for new hires or staffers if you've got a good telecommuting strategy.

BE CREATIVE. Retired Cobol programmers can be drafted part-time for year 2000 work.

TAKE THE TIME TO HIRE PEOPLE WHO WILL STAY. Allow candidates to talk with peers and key customers to be sure their style and personalities fit.

LOYALTY ISN'T A DIRTY WORD. Keep existing staff by giving them the kind of responsibility that engenders a feeling of ownership of the company.

GET A DEDICATED RECRUITER. Persuade the human resources department that you need a full-time sorter to ease the burden so you can do your job.

ENLIST STAFF. Get your people to recruit. A recruiting bonus will raise their energy level.

BUT KEEP THIS IN MIND. Remember that you're there to support the business, not to use new technologies. If the business doesn't need it, don't get it.

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PAUL STRASSMANN

THE REAL COSTS OF PCs

The average cost of ownership of a PC has finally made the headlines. Recently, *Fortune Magazine* quoted the annual cost of PC ownership at more than $9,000, *The Economist* at $6,400, *The New York Times* at $13,000 and *Business Week* at $8,000.

The most frequent source of these numbers is Gartner Group, Inc., which will oblige with estimates that range from $7,138 to $13,000.

The sudden interest is because of the prospect of a $500 network computer displacing a $2,500 PC.

For senior executives contemplating network computers and PCs, these conflicting numbers are bound to cause confusion. A typical Fortune 1,000 corporation with an annual information technology budget of $200 million is likely to have about 10,000 PCs.

If you take the highest Gartner numbers and the lowball claims of $2,500 for the cost of ownership of a network computer, you have a hypothetical cost reduction of $105 million for that company.

If you prefer *The Economist*, you could argue that there is only $34 million in savings.

Whatever number you choose, to deliver intranet-run network computers, this company would need, by my estimate, at least $60 million worth of new development money to extricate itself from a fully implemented client/server architecture.

That represents a full year's development and maintenance cost.

Taking these average cost figures at face value can lead to fiscal disaster.

Concocting hypothetical savings based on mythical costs is a surefire way for network computer-minded chief information officers to get into real trouble.

The fact is that PC ownership costs are driven by how people work and how they are managed. These factors make "average cost of ownership" a meaningless abstraction.

I saw this in 1991 when I commissioned a study of 32 PC LANs while I was CIO of the U.S. Department of Defense. I found the "average cost" per LAN ranged from $3,500 to more than $60,000 per seat.

Clearly, there was no such thing as an average cost for personal computing.

INFLUENCES ON PC OWNERSHIP

There are two major influences that determine the cost of PC ownership: workload and management practices. Both are shaped by the customers, technology and applications.

Customers: The occupational profile of employees drives computing demand. Professionals devour computing capacity, whereas craft labor hardly uses any.

The penetration of computing will also vary. It's extremely high with engineers and the accounting types but much less with technicians and salespeople. Mobile workers require less computing than sedentary number crunchers. Computer literacy also matters.

Employee turnover places enormous burdens on support staffs for hand-holding, training, error correction and equipment relocation.

For instance, the Bank Administration Institute reports a 50% turnover rate among consumer credit officers. That staggering instability must surely increase the costs of all support.

Technology: Technology architecture and adherence to standards also influence costs. The choice of identical versions of applications and operating systems greatly simplifies diagnostics and network maintenance. Liberal Internet access is a killer, especially on network capacity. Without central configuration controls over equipment and software, one can easily double the staff at the help desks. Most importantly, there are enormous economies of scale in central network administration costs. The statistics of queuing theory will always favor large networks over small ones.

Applications: The failure of application software is perhaps the most severe cause of all customer dissatisfaction. Some of it comes from poor design, insufficient testing of maintenance and excessive permissiveness of local operators to fool around with features and options.

Removable disk drives that allow users to insert private software increase the workload for everyone. Strict enforcement of security procedures and controls may cost as much as $1,000 per PC per year.

Although customer, technology and application characteristics can easily account for thousands of dollars of additional expense for a PC, poor management explains most of the difference between low and high costs. You don't need network computers to reduce desktop ownership costs. All it takes are users and technicians who are reasonably competent at what they do.

Sophisticated network management systems mean very little if nobody takes the time to assist a few chronically incompetent PC users. Tutoring and assistance are needed to reduce computing costs, not just technological fixes.

Making users, as well as IS, accountable for costs is essential to offer the right inducements for cost reduction and continuous quality improvement.

You can't manage PC costs by going after average costs. Average travel time doesn't tell much about traffic jams. Likewise, there's no such thing as an average cost benchmark for the cost of PC or network computer ownership.

The costs of PC networks will differ for every firm because personal computing reflects the unique characteristics of how a firm manages its computers. I've counted 30 possible PC expense drivers, each of which can increase ownership costs if managed poorly.

The only way to reduce costs is to uncover the primary causes of poor choices, neglectful practices and dysfunctional computing behavior.

Paul Strassmann (paul@strassmann.com) works on a PC he bought for $2,356. At his consulting rates, the monthly cost for recovering from crashes, hanging on the phone with vendor help desks and deconflicting incompatible software exceeds the purchase cost.

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Wanted: Better management

Do you feel pulled in different directions? Do some jobs just never end?

Well, you must work in information systems, judging from a study of 40 corporate IS organizations by The Hackett Group, a management consulting firm in Hudson, Ohio. The organizations have 15-to-5,000 staffers.

The study found the following:

■ Nearly 60% of large, information technology-managed projects are delivered late and over budget.

■ 57% of staff time is spent on infrastructure support; less than 5% is spent planning for future uses of technology.

■ The typical organization juggles at least five operating systems on a comparable number of platforms and must be fluent in at least six programming languages.

So what does it all mean?

Primarily, IT organizations must be better at management, says David Axson, a vice president at The Hackett Group.

"Many companies do not have a very effective management process for IT," Axson says.

Axson says chief information officers should focus on the following:

■ Improving deadline and budget performances on projects.

■ Learning to handle multiple infrastructures, including the mainframe, which, Axson says, will be around for the next 10 to 15 years.

■ More systems integration.

■ Becoming more customer-focused while standardizing technology throughout the business. CIOs should ask themselves: What makes the best business sense?

— Rick Saia

Know-how pays off

Knowledge management programs at companies where employees share best practices according to a newly released study of 31 companies from the American Productivity and Quality Center (APQC), the nonprofit organization that created the guidelines for the Baldrige Award.

The APQC's Carla O'Dell: The Internet is "driving employees to collaborate and share knowledge."

Texas Instruments Inc. avoided spending $300 million to build a new wafer fabrication plant thanks to knowledge management. By sharing best practices over the Internet and a Notes database, IT's technicians boosted manufacturing capacity so much that it equaled the yield from a new plant, according to Carla O'Dell, president of the Houston-based APQC.

Two Chevron Corp. best practices teams have saved the company $170 million by sharing knowledge that had been scattered around the country. One team saved $150 million by sharing ways to reduce the use of electric power and fuel. Another saved $20 million by comparing data on gas compressors.

The study also suggested some best practices for using information technology to support knowledge management. Early on, adopt an easy-to-use platform, such as a corporate intranet or Notes, and [illegible] a single technology platform to provide access to knowledge and to avoid overrun in reorganization.

Other IS-related findings:

■ When it comes to who's running knowledge management efforts, it's still a chaotic situation. The silver lining: Most people are taking a cross-functional approach, with IS working with key business managers.

■ The Internet has emerged as the No. 1 factor driving employees to collaborate and share knowledge.

■ Knowledge management planners need to consider whether to go with a push or pull philosophy for delivering knowledge. "If push, that means they know what information we want people to get at their desktop. If pull, we want to give people the tools to find the info they need. That's two different solutions, and that has an implication for their architecture."

The APQC study will be available to the general public in March. A follow-up study on the use of information technology to support knowledge management is under way. For more information about these studies, contact the APQC at (713) 681-4020. The center's World Wide Web address is www.apqc.org.

— Allan E. Alter

Top 11 technologies for supporting knowledge management:

- E-mail
- Internet
- Project management systems
- Groupware
- Videoconferencing
- Databases for institutional knowledge
- Intranets
- Knowledge-based systems
- Customer management systems
- Skills inventory systems
- Yellow pages for knowledge

Knowledge management boosts business performance

EXECUTIVE TRACK

Stephen J. Vozella was named senior vice president of client and information services at Grand Circle Corp., a Boston-based company that specializes in direct marketing.

Ellsworth Hercules was named chief information officer at SARCOM Inc., an information technology solutions provider in Columbus, Ohio. He had held executive posts at Woolworth Corp. in Camp Hill, Pa., and Montgomery Ward Co. in Chicago.

Joseph Sheehan has joined CFT Consulting Inc., in Sarasota, Fla., as a senior consultant. He had been director of information systems at Adidas America, Inc. Sheehan will be responsible for design and implementation of supply-chain solutions at two of CFT's major clients.

Robert A. Gilchrist was named vice president and CIO at Corning, Inc. He has been with the company since 1973 and most recently was a division vice president and director of IT at the Corning, N.Y.-based manufacturer.

Ira R. Greenstein was named CIO at Venable, Baetjer and Howard LLP, a Baltimore law firm. He had served in different roles at Vanstar Corp. and Coca-Cola Enterprises, Inc.

Joseph Riera was named CIO of Information Systems & Technology at Apple Computer, Inc. in Cupertino, Calif. He had been vice president of this division. He held previous IS positions at Plantronics, Inc., GTE Sylvania, Inc., International Harvester, Inc. and the Federal Reserve Bank of San Francisco.

Alfred Traversi was named vice president of IT/operations at Lexmark International, Inc. in Lexington, Ky. He had been vice president of operations services at Taco Bell Corp.

Martin A. Brennan was named senior vice president and CIO of Independence Blue Cross in Philadelphia. He had served 25 years at Cigna Corp., most recently as a senior vice president of the insurance company.

Dr. Myra Nicol Williams, former vice president and CIO at Glaxo, Inc. (now part of Glaxo Wellcome PLC), was named to the board of directors at MDL Information Systems, Inc., in San Leandro, Calif.

John J. Chiazza, former CIO at Eastman Kodak Co., was elected a vice president at the Rochester, N.Y.-based company. He is general manager of U.S. and Canada services at Kodak.

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Know-how pays off

Knowledge management pays off for a company when its employees share best practices, according to a newly released study of 33 companies from the American Productivity and Quality Center (APQC), the nonprofit organization that created the guidelines for the Baldrige Award.

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BASED ON 33 COMPANIES STUDIED BY APQC, HOUSTON

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Buyer's Guide

USER VIEW:

Web commerce servers may be proliferating, but confusion still rules the market, according to experienced users

building the virtual

CONTINUED FROM PAGE 1

AMONG THOSE who abandoned Commerce Server (now part of Netscape's Enterprise Server) when Microsoft Corp. released its Merchant Server six months ago was Warren. He now uses Merchant Server to create sites for Judd's clients, who use the Web to sell publications. He says Merchant Server is easy to maintain and administer and that it offers complete integration with Windows NT and Microsoft BackOffice products.

Others were more impressed with Netscape products. Outdoor equipment supplier Recreational Equipment, Inc. (REI) has had success with Netscape's Commercial Applications, including Merchant System, which is also pitched at the commerce server market. Matt Hyde, online store manager at REI, chose Merchant System on the strength of its availability and Netscape's long-term plans for the product.

Anyone buying in to Web commerce server technology needs to recognize how fast the sector is changing. In the past six months, a wide array of products has emerged, promising the ability to conduct electronic commerce at prices from $1,495 to well over $140,000. Analysts are reluctant to pin down a list of recommended products, noting there are many products but few with field experience. To users, the nascent technology and rash of vendor choices can be mind-boggling.

One company gaining in commerce server experience is Fruit of the Loom, Inc. in Bowling Green, Ky., which reports that its market share has jumped since June, when its first site went up using Connect, Inc.'s OneServer. Charles Kirk, senior vice president of servers and logistics at Fruit of the Loom, says his order-entry application connects distributors with decorators who buy products such

Virtual mall, page 77

definition:

"Electronic commerce is business conducted among trading partners using electronic information technology over the Internet, intranets or private networks," says Erica Rugullies, a research analyst at Hurwitz Group, Inc. in Newton, Mass. "Any transaction that will result in the exchange of money is a core component of electronic commerce."

Electronic commerce is an umbrella term that includes electronic shopping, electronic data interchange and transaction processing, according to Stan Dolberg, director of software strategy service at Forrester Research, Inc. in Cambridge, Mass.

Electronic shopping requires the creation of a storefront, usually through the use of a commerce, or merchant server. A commerce server includes order processing and tracking; transaction management; back-end database; connection to a payment processing organization; content server; content manager; World Wide Web browser; and secure middleware that connects the front and to the back end.

Tip Users first need to ask themselves why they should sell on the Internet, says Clay Ryder, director of Zona Research, Inc., a market research and consulting company in Redwood City, Calif. "If you can't answer the question, save yourself the trouble" of setting up a commerce site, he says.

Tip Keep in mind that Internet demographics don't reflect society as a whole. They reflect the educated, white-collar wealth on one side and, on the other side, college students and workers in nonprofit organizations — workers with no disposable income. People won't necessarily come in droves, and those who do may not be interested in your products. "You're [not] shooting to the heart of middle America," Ryder says.

Tip Remember that most Web commerce products require a lot of customization, says Erina DuBois, an analyst at Dataquest in San Jose, Calif. Products are still hard to install because of issues with legacy systems. "A lot of people will need support and service, which can become very expensive," she says.

Tip Divide your budget into three, says Time's Bruce Judson. Use the first third on the initial product, he says. Recognize that it is important to experiment and learn. Hold on to the second third to build on what you learn in the first phase or for a new product, and spend the last third on promotion, he says.

Tip Bring all the issues to the table at the outset of the project, says Service Merchandise's Dan Mushrush. "We made decisions on the fly; it is better to do them up front," he says. For example, Internet security and connection to the legacy database are big issues. At Service Merchandise, "[The database] is still not integrated. We're mainframe people trying to learn a new technology."

Tip If new technology scares you, if you have a limited budget or if you want to avoid the headache of developing a Web site yourself, you can go to an Internet service provider — some of whom are now being called commerce service providers — says Nicole Vanderbilt, a digital commerce analyst at Jupiter Communications LLC in New York.

Tips, page 77

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30. Medical/Law/Education
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50. Business Service (except DP)
60. Government - State/Federal/Local
65. Communications Systems/Public Utilities/Transportation
70. Mining/Construction/Petroleum/ Refining/Agriculture
80. Manufacturer of Computers, Computer-Related Systems or Peripherals
85. Systems Integrators, VARs, Computer Service Bureaus, Software Planning & Consulting Services
90. Computer/Peripheral Dealer/Dist./ Retailer
95. Other_____ (Please Specify)

2. TITLE/FUNCTION (Circle one)
IS/MIS/DP MANAGEMENT
19. Chief Information Officer/Vice President/Asst. VP IS/MIS/DP Management
21. Dir./Mgr. MIS Services, Information Center
22. Dir./Mgr. Network Sys., Data/Tele Comm., LAN Mgr./PC Mgr., Tech. Planning, Administrative Services
23. Dir./Mgr. Sys. Development, System Architecture
31. Programming Management, Software Developers
41. Engineering, Scientific, R&D, Tech. Management
80. Sys. Integrators/VARs/Consulting Management
CORPORATE MANAGEMENT
11. President, Owner/Partner, General Mgt.
12. Vice President, Asst. Vice President
13. Treasurer, Controller, Financial Officer
DEPARTMENTAL MANAGEMENT
51. Sales & Mktg. Management
70. Medical, Legal, Accounting Mgt.
OTHER PROFESSIONAL MANAGEMENT
60. Information Centers/Libraries, Educators, Journalists, Students
90. Other Titled Personnel

3. Do you use, evaluate, specify, recommend, purchase: (Circle all that apply.)
Operating Systems
(a) Solaris (e) Mac OS
(b) Netware (f) Windows NT
(c) OS/2 (g) Windows
(d) Unix (h) NeXTstep
App. Development Products ☐ Yes ☐ No
Networking Products ☐ Yes ☐ No
Internet Products ☐ Yes ☐ No

4. Which of the following products do you buy, specify, recommend or approve the purchase of? (Check all that apply.)
(a) ☐ Internet software
(b) ☐ Internet browsers
(c) ☐ Web authoring/development tools

5. Do you use the Internet? ☐ Yes ☐ No

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70 Mining/Construction/Petroleum/ Refining/Agriculture
80 Manufacturer of Computers, Computer-Related Systems or Peripherals
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31. Programming Management, Software Developers
41 Engineering, Scientific, R&D, Tech. Management
80. Sys. Integrators/VARs/Consulting Management
CORPORATE MANAGEMENT
11 President, Owner/Partner, General Mgt.
12 Vice President, Asst. Vice President
13 Treasurer, Controller, Financial Officer
DEPARTMENTAL MANAGEMENT
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(c) OS/2 (g) Windows
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Networking Products ☐ Yes ☐ No
Internet Products ☐ Yes ☐ No

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● You might save money by outsourcing the early site development. One advantage of going with a vendor such as IBM, says The Security Store's Gina Gombar, is that you don't have to spend a lot of development dollars on site. Gombar, vice president of sales and marketing at the San Diego-based lock, safe and security devices company, turned to IBM's World Distributor Service six months ago in hope of building an easy-to-use site. "We wanted the backing of the supplier to be very strong in helping us develop that. IBM did the initial development. Now, we'll pick up and develop, but they'll be supplying the tools," she says.

Tip Consider how a third-party provider can help people find your site more easily than if you host it yourself. Because The Security Store is in IBM's virtual mall, exposure is almost guaranteed, says Gombar, who noted that it is still too early to gauge how much business the Web will generate for her company.

● Even if you have the technology sorted out, you need to work on the business side of your application, such as customer satisfaction, sales and service, Judd's Richard Warren says. What could really make your site take off is allowing your customers to solve their problems online with customer service representatives. "But the business plans that allow for that kind of service are not there yet," he says.

Tip Users should ask themselves what they are trying to accomplish, says Geoffrey Bock, senior consultant at Patricia Seybold Group in Boston. If they are trying to transform their business so they can deliver products online instantly, manage inventory or talk directly to distributors, they might like a high-end turnkey product such as OrderStream or OneServer from Connect, Inc. Such products include a runtime version of a database management system, a text-search engine, reporting tools and encryption.

● Understand your vendor's upgrade plans. REI used Netscape technology to build an online catalog of 1,500 outdoor equipment products. Matt Hyde, online store manager at REI, says the decision to use Netscape's Commercial Applications, including Merchant System, was an easy one based on the availability of Netscape's products and the promise of upgrades. Try to visualize where the site will be in a year or two and not when you launch it, Hyde says.

building the virtual mall

CONTINUED FROM PAGE 75

as T-shirts and decorate them for a specific purpose. All transactions are now done electronically instead of by phone. The project has cost the company between $3 million and $4 million. Kirk says the key to Fruit of the Loom's success was the company's up-front planning.

Retail chain Service Merchandise, Inc. in Brentwood, Tenn., echoes that planning advice. Dan Mushrush, the company's director of technology and planning, says he regrets not airing all issues at the start of the project. For example, he is still trying to tighten links between the Internet and the corporate database. "It came together for us, but I'm not sure that's how I'd do it again," says Mushrush, who developed the catalog application in-house. It was launched on Thanksgiving to give a boost to the mail-order business.

Mohan is a freelance writer in Los Altos, Calif.

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In Depth

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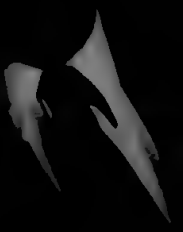


ARTIFICIAL INTELLIGENCE APPLICATIONS MAKE THEIR MARK, OFTEN WITHOUT THE BLESSING OF IS

By Neena Buck

Here are statements I've heard uttered with great confidence:

"We don't use AI; we use C++."

"AI is dead. We use object-oriented programming."

"Neural networks to model nonlinear dynamical systems? I can solve the same problem using multiple linear regression techniques."

Everybody has a stereotype about artificial intelligence. Some equate it with a particular language or tool. Some visualize robots far removed from daily business problems. This confusion is understandable. The technologies that have evolved from research in AI come in many guises, but very few carry the "AI" label.

The 1980s witnessed a great deal of media hype

Just don't call it AI, page 80

JUST DON'T CALL IT AI

CONTINUED FROM PAGE 79

about AI and its promising commercial offspring, expert systems. Venture capital firms invested heavily in AI companies that sprouted like weeds in Cambridge, Mass., and Palo Alto, Calif. The popular press got carried away with regard to what AI applications could do and how soon they'd be able to do it. To top it off, the AI community tended to portray a degree of arrogance and exclusivity.

By the early 1990s, it appeared that AI's star had fallen. The systems that were being used lacked the pizzazz of science fiction. Mainstream information systems organizations that had explored the technology or had read about it in passing dismissed it.

But, in fact, in the past decade, commercial implementations of ideas borrowed from AI research have found their way into many applications. What has emerged isn't a single entity, but rather a set of disparate tools and techniques focused on particular application domains and packaged to solve specific (and widely different) problems. The intelligence in these tools is embedded, and the end result is greater ease of use. These tools constitute the first big wave of commercialization of ideas derived from research in AI and have an enormous effect on business.

The most sophisticated World Wide Web search engines; the leading-edge knowledge management tools; flexible software that represents, models and redesigns your business processes; data mining systems; and voice-recognition and language-understanding systems all use AI techniques.

Despite IS' skepticism, for the past eight years — behind the scenes and away from the limelight — robust systems have been developed and deployed using AI-based tools. Many of these projects were initiated outside mainstream IS organizations because of resistance, they often began as skunk works projects and continued only after their feasibility was demonstrated at the highest levels of the organization.

One other common theme: AI wasn't mentioned when these projects were pitched.

'Demystify it'

IS' lack of interest in anything bearing the "AI" tag has prompted some business units to take matters into their own hands. Ask John Ownby, group manager of financial systems at Frito-Lay Co. in Plano, Texas. Ownby started out as a casual watcher of AI technologies. "I read articles about expert systems in airplanes," he says. He tried to persuade the Frito-Lay IS department to apply the technology but met resistance. So he took it upon himself to develop a working model.

"I was trying to demystify it so that people realized it wasn't technically impossible," he says. He says he didn't mention AI "because people tuned out when I used that word."

Frito-Lay developed a diagnostic system that searched for inventory-related errors, proposed ways to correct them and extrapolated the identified errors into patterns of behavior.

Today, this inventory-control system is in production and provides expert diagnostics to 13,000 salespeople, 1,000 sales managers and 60 clerical employees.

The Federal National Mortgage Association, or Fannie Mae, has developed several knowledge-based systems using ART-Enterprise Development Environment, a product from Brightware, Inc. in Novato, Calif., to support its key business processes. One of these systems — called Knowledge Acquisition and Rule Management Assistant, or KARMA — works in concert with a business rule server to provide users with direct ownership and management of Fannie Mae's policies.

The project was jointly sponsored by the chief information officer and the chief credit officer at Fannie Mae. "Partnership with business units is key," says Mike Williams, senior vice president of technology integration at Fannie Mae.

AI applications often begin life as skunk works projects hidden from IS.

In addition to this project, Fannie Mae has developed and sold a product called Desktop Underwriter to more than 300 of its customers. Desktop Underwriter assists mortgage lenders in underwriting loans. Each underwriting system processes an average of 1,000 loans per day.

Sharing common knowledge about parts and processes is important to a company such as The Boeing Co. in Seattle, which needs to track millions of parts designs. The company is working on a neural representation for knowledge-based engineering, with the goal of sharing common terminology between projects. "The issue is getting serious applications into production," says Bob Abarbanel, technology manager within the Advanced Design Systems group at Boeing. "It doesn't matter what you call the technology."

Boeing has created FlyThru, a three-dimensional visualization and verification system that lets engineers check their designs and view up to 1,500 simulated models. Boeing's goal is 100% digital definition and digital preassembly — which would eliminate the need for physical mock-ups. The company used this process for the design of its 777 aircraft.

In yet another real-world example, United HealthCare Corp. (UHC) in Minnetonka, Minn., uses knowledge-based technology from Template Software, Inc. in Dulles, Va., to automate physician claims processing (after data entry). By capturing complex adjudication logic in the form of business rules, the system reviews physician services to ensure that submitted charges meet contractual and other guidelines.

"Our CIO wanted to explore the value of expert systems technology," says David Williams, development manager at UHC. "We started the project in 1990 and developed a prototype within a year." In 1995, this managed-care company says it realized nearly $20 million in gross savings through the system.

What comes next

The annual American Association for Artificial Intelligence (AAAI) conference was a raucous, lavish affair during the 1980s. The most recent AAAI meeting, which was held in Portland, Ore., last August, was subdued by contrast but offered some insights into the direction of the field.

Today's tools are the fruits of the first generation of commercial efforts — just one step toward the AI goal. The next wave should find these underlying tools more transparent to the end user. The only obvious thing to the user will be greater ease of use and naturalness of expression. The commercial spin-offs from AI won't be separate but will get absorbed to create better software and richer modeling environments.

In the meantime, Howard Shrobe, a principal research scientist at MIT's Artificial Intelligence lab, suggests that with such a young and ambitious field, "one can expect that people will make a lot of intellectual mistakes along the way."

It has been little more than a decade since machines grew powerful enough to model the sorts of processes that AI systems need to emulate. In that time, the academic world has pursued many different courses of brain and mind research in an attempt to understand how we think.

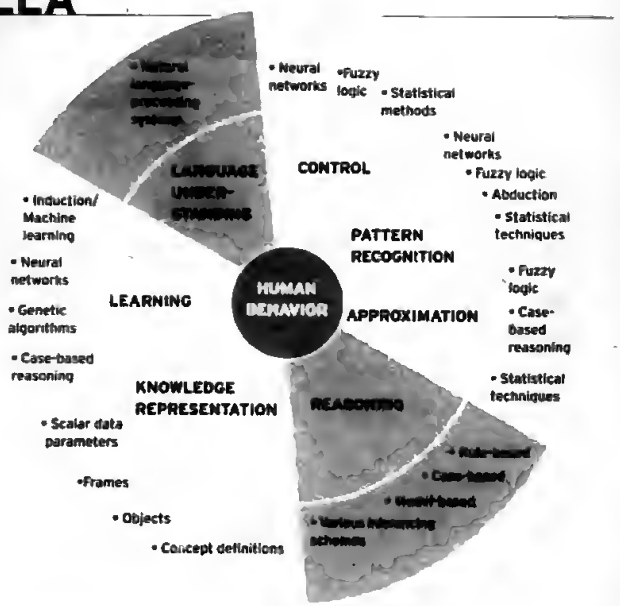
Shrobe continues: "It took one and a half millennia between Aristotle and Galileo. During that time, though, we did a lot of physics, and we discovered a great deal, even though we had a few major premises wrong."

Buck is an industry analyst and a consultant in the use of emerging technologies. She is based in Cambridge, Mass., and can be reached at nbuck@tx.netcom.com.

THE AI UMBRELLA

AI is a research discipline, not a technology. Its ultimate goal is to understand how people think and how computer systems can model some aspects of human reasoning in order to get them to act as more natural and effective collaborators with humans.

Research in different areas of intelligent systems has produced a variety of technologies. Each of these model some aspect of human thinking or behavior. The commercial technologies that have spun off from this research are becoming integrated into mainstream tools, no longer carry the AI label and are increasingly transparent to the user. Their ultimate intent is to create an environment where computer systems have as many of these properties as feasible in order to preserve naturalness of expression between the formulation of a problem and its implementation.



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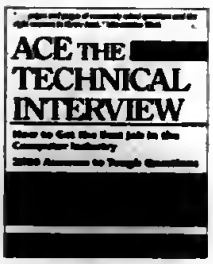
New career titles on IS education, consulting and job hunting

Ace the Technical Interview: How to Get the Best Job in the Computer Industry

Edited by Michael Rothstein
McGraw-Hill, Inc., New York; 493 pages; $21.95 (paperback)

Memory can be a fleeting thing. So review, rehearsal and preparation can be critical when it comes to landing a new information systems job. In fact, that seems to be the goal behind the writing of *Ace the Technical Interview* — a collection of answers to some 2,000 tough questions about information technology.

Rothstein, an independent IT consultant, got help on the questions and answers from more than two dozen specialists, each with hiring experience in a particular subject area. The result certainly isn't light reading. But it's likely that even the most savvy computer professional will find questions presented here — ranging from Cobol and IBM's virtual machine architecture to Java — that they will admit to having trouble answering.



The book also includes several chapters on the process of getting an IS job. They reveal the kinds of analysis used by hiring managers to select final job candidates as well as the dynamics of the interviewing process.

For a job seeker, it can be helpful to understand the thinking behind those techniques and learn to spot them and respond appropriately.

Because it's focused on IT careers, *Ace the Technical Interview* provides a valuable alternative to generic career books. It offers realistic descriptions of the interview process and tips on how to control it. It also provides advice and suggestions on working with employment agencies. The book could have been even more useful had it been made available on CD-ROM. That would have permitted keyword searches for specific topics.

Still, Rothstein has made a valuable contribution to the job search literature, not to mention supplying endless fodder for coffee break chats.

— Alan R. Earls

The A+ Certification Success Guide for Computer Technicians

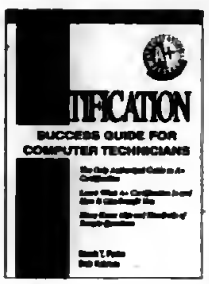
By Sarah T. Parks and Bob Kalman
McGraw-Hill, Inc., New York; 288 pages; $44.95 (hardcover)

The point of *The A+ Certification Success Guide for Computer Technicians* is, as the title implies, to help individuals master this increasingly accepted competency test for common desktop systems. Sponsored by the Computing Technology Industry Association (CompTIA), a trade group with 6,000 members, the A+ certification program has recently gained rapid acceptance. About one year ago, the number of individuals who were A+ certified was approaching 20,000.

CompUSA, Inc., one of the largest microcomputer resellers, requires all service employees to take the exam within 90 days of being hired. Similarly, major companies such as Microsoft Corp., Digital Equipment Corp. and Wang Laboratories, Inc. require the test for field-service professionals.

Parks and Kalman have crafted a well-illustrated, carefully organized guide that can help you prepare for the exam.

The first three chapters provide orientation, including a discussion of certification offered by CompTIA and others, a discussion of the role that certification can play in individual career development, tips on exam taking and information on registering for tests.



Chapter four focuses on the A+ core exam, which all A+ candidates must pass. Chapters five and six, respectively, provide preparation for the DOS/Windows and Macintosh environment exams. Those three chapters use brief groups of multiple-choice questions followed by an answer key to review various hardware and software topics.

The authors stress that the book alone may not provide sufficient information for everyone preparing to take the test. But its organized and readable presentation will probably make it the preferred study tool.

— Alan R. Earls

The Computer Consultant's Guide

By Janet Ruhl
John E. Wiley & Sons, Inc., New York; 276 pages; $19.95 (paperback)

A more effective and more accurate title for *The Computer Consultant's Guide* could have been *Consulting for Dummies*. Not that consultants or anyone reading this book is likely to be anything but a bright achiever type, but Ruhl has succeeded in presenting her information with the same simplicity and accessibility found in the well-known "Dummies" series of computer-oriented titles published by IDG Books Worldwide, Inc.

That means almost every page can be quickly translated into a to-do list or the outline of a plan of action. Checklists and clear structure are supplemented by information boxes, scripts and "gotchas" — to-the-point notes on pitfalls to avoid.

Indeed, Ruhl, who has been on the staff of CompuServe Corp.'s Consultant's Forum since 1990, clearly has heard every gripe and war story consultants tell one another.

What she has heard is distilled in the book. As a consequence, she's credible when offering advice to would-be consultants trying to determine if they have the skills needed to make a living in the field. She is equally credible when she outlines structures for setting up and managing a consulting practice, setting prices, collecting fees and partnering with other consulting organizations.

Although the volume of information provided by Ruhl is tremendous, it's easy to absorb and can be immediately useful. Even experienced consultants will find ideas to savor.

But those who will benefit most from *The Computer Consultant's Guide* are individuals with good technical skills who need a short course in entrepreneurship and self-management.

It doesn't get more realistic than her suggestion that consultants develop a streak of paranoia: "A consultant should never assume that their clearest explanations have been understood or their direst warnings heeded. In short, they should never assume anything!" she advises.

— Alan R. Earls

Job Hunting for Dummies

By Max Messmer
IDG Books Worldwide, Inc., Foster City, Calif.; 372 pages; $16.99 (paperback)

Messmer, chairman and CEO of placement firm Robert Half International, Inc., is widely published on the issue of how to land a new job. He brings clarity to the reader who may be feeling overwhelmed or bogged down by a job search.

But much of the advice contained here seems self-evident, such as, "Few aspects of job interviewing are more important to the impression you create than your appearance: how well you're groomed and how appropriately you're dressed."

Even in chapters that weigh in with the obvious, however, Messmer incorporates anecdotes, humor and easy-to-use checklists that even the most experienced job seeker will find useful.

For example, Chapter 22 details strategies for dealing with difficult interviewers, from "the bumbler" ("They know they need to hire someone, but they haven't gotten around to formulating any specific hiring criteria") to "the games person" who sees the job interview as "a game of cat and mouse or chess. The principal challenge of this game ... is finding ways to trip you up."

Particularly valuable to job hunters who are new to the market or recently displaced are chapters three and four. They offer a game plan for assessing your goals and skills, setting targets and scoping out availability.

The format of the "Dummies" series, including a detailed table of contents and topical summaries at the beginning of each chapter, makes it easy to pick and choose the information you need most.

But consider this a general guide. It isn't "IS Job Hunting for Dummies," and Messmer refrains from offering advice on landing a job in a particular field.

— Leslie Goff

Earls is a freelance writer in Franklin, Mass. Goff is a freelance writer in New York.

LEFT COAST BLUES

Notorious for their high cost of living, Los Angeles and San Diego are having a tough time luring IS talent/By Linda Wilson

THE SOUTHERN CALIFORNIA MARKET — which includes the Los Angeles and San Diego areas — abounds in opportunities for computer professionals. The region has more than rebounded from a severe recession in the early 1990s, in which many defense contractors downsized dramatically. Now companies are hiring.

"There are too many companies looking and not enough candidates," says Bob Gennawey, managing director of Source Services Corp.'s office in the Orange County city of Irvine. "Everybody is doing projects that they've held back on."

But relocation to Southern California can be a tough sell. Here's a closer look at the job climate in the greater Los Angeles and San Diego areas.

LOS ANGELES

THE JOB MARKET is so tight in Los Angeles that The Times Mirror Co., a 19-property media company, gave up on hiring full-time programmers to develop a corporate intranet. Instead, the company, which owns *The Los Angeles Times*, hired contractors.

"We would hire them if we could find them. What we're finding are consultants and [people who] want to be consultants," says Derinda Campbell, director of corporate information services.

Campbell oversees Times Mirror's corporate information systems staff of 20. Because each of the company's properties has its own IS staff, corporate IS staffers coordinate enterprise-level projects, Campbell says. Two prominent enterprise projects are the intranet and a frame-relay-based wide-area network.

Besides her trouble finding intranet-savvy developers, Campbell has had two openings since May for WAN architects with knowledge of frame relay.

Times Mirror isn't alone. All companies are scrambling to find IS professionals. Although Los Angeles' defense industry still employs numerous people, other industries also are prominent. They include entertainment, automotive (many Japanese automakers have U.S. headquarters in the Los Angeles area), health care, higher education, banking and retail.

Besides Internet/intranet developers, sought-after skills to fill full-time positions include Visual Basic, C++, PowerBuilder and LAN and WAN architecture. Developers and database administrators with experience in Oracle Corp. skills or Sybase, Inc.'s relational database management systems are also in demand. All those skills are hot on the contract side as well, as are independent contractors with Cobol experience to work on year 2000 conversion projects.

Although Los Angeles boasts a warm climate and lots of beaches, those qualities don't attract out-of-towners in the droves that folklore suggests. Many people are wary of the metropolitan area's high cost of living, recruiters say.

TYPICAL IS SALARIES

Los Angeles & San Diego

Job title	Average salary
CIO/VP	$102,000
Mainframe project mgr.	$73,000
Director, IS operations	$69,000
Client/server project mgr.	$62,000
Systems programmer	$54,000
Systems analyst	$51,000
Network administrator	$48,000
LAN manager	$47,000

Source: Computerworld's Annual Salary Survey

SAN DIEGO

LIKE LOS ANGELES, San Diego companies are scrambling to find talented IS employees. The hottest skill areas mirror those in Los Angeles. And also like Los Angeles, warm weather, beaches and mountains aren't the magnet for out-of-towners that you'd expect.

But unlike the Los Angeles area, where large corporations abound, San Diego is a mecca of small and midsize companies, particularly in biotechnology and telecommunications.

"San Diego is an entrepreneurial town," says Laurie Levenson, managing director of the San Diego office of Source Services. "All the technology companies are hiring. It is a hot, competitive market for candidates."

Gensia, Inc., a 200-employee biotechnology company with a six-person IS staff, is typical. The company is looking for someone with development and administration experience in Oracle skills.

"We've been looking for someone for six weeks," says Frank Cicero, senior manager of network services. Finding someone with experience is crucial, Cicero says, because the new employee will lead development and end-user support of a data warehouse and decision-support system for sales and marketing.

A larger example is Qualcomm, Inc., a supplier of digital wireless communications systems. "We are having difficulty finding people," says Dan Sullivan, senior vice president of human resources. "It is becoming more difficult this year [1996] compared with previous years."

Qualcomm's IS department has 20 openings in network administration and 50 to 75 openings in product development. Sullivan says he expects to hire 200 computer engineers in 1997 to add to Qualcomm's IS, network administration and product development areas.

"We expect demand to continue to be high," Sullivan says. And that's likely to be the case throughout Southern California this year.

Wilson is a freelance writer in Glen Ellyn, Ill.

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- Some international travel

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- 3 years Purchasing, Installing, upgrading and maintaining software & hardware
- Support 150 users locally and internationally
- DOS, Windows 3.x, Windows 95, MS Office 95, ccmail on Lotus Notes & Novell
- Some international travel

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In the corporate office and occasionally onboard, you will develop and support a variety of shipboard systems utilizing COBOL, AIX, C, VB, Oracle and Notes. Strong IBM midrange and Hotel/Retail Systems experience preferred. Ability to travel is required. Position 3220-CW.

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Help support our numerous Windows, OS/2, DOS, Novell Netware LANs and be a key player in the design and implementation of our next generation LAN infrastructure. CNE or equivalent experience is essential. Position 3222-CW.

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You will be involved in every aspect of our dynamic systems environment, including S/390, CICS, AIX/UNIX, Network Communications, software connectivity and a host of new technologies. Strong MVS and CICS skills are essential. Position 3221-CW.

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Grow with us into the next generation of applications development as you participate in development, support and complex system interface work. Strong MVS, COBOL, CICS, VSAM skills are essential, along with a "can do" personality. Position 3223-CW.

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- Unix Systems Administration
- Electronic Mail
- Networking
- Help Desk Supervisor
- Production Support

These positions require excellent communication/interpersonal skills. We are looking for team players who are quick on their feet, self-motivated and challenged by a rapidly growing, evolving environment.

If you are an experienced, dynamic individual, looking for challenge, opportunity and growth, we may have a position for you.

All positions require experience with a strong educational background and excellent technical/business skills.

For consideration, please send resume to: **DreamWorks SKG, Attn: DWIT/CW/0113, P.O. Box 8896, Universal City, 91608.** NO PHONE CALLS, PLEASE! We support a diverse workforce.

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[redacted]
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San Diego Data Processing Corporation, an innovative and creative organization **providing Information Systems technology to the City of San Diego**, is seeking qualified individuals for the following positions:

DATABASE ANALYST
Provides relational database technology leadership; acts as customer liaison to meet data requirements, support business goals, and convert legacy systems to new technologies; and performs logical data and/or object modeling. Requires 3-5 years' experience in client-server applications, 5 years' database analyst/admin. experience in a large production environment (7x24), and 3 years' Oracle/Ingres RDBMS in a UNIX environment. DB2/6000 a plus and 3 years' experience data modeling, Bachman, or ERwin highly desirable. **(Code: DACW)**

SR. PROGRAMMER ANALYST TECHNICAL LEAD
Provides project-specific technical leadership, converts Legacy M/F systems to client-server solutions, and oversees/leads technical aspect of projects; Requires 3-5+ years' experience leading technical resources in business applications, including financial, procurement, and inventory systems, and knowledge of conversion/interface of Legacy IBM mainframe systems to vendor client-server environment. Experience in development projects, vended package implementations, and background as a developer in Powerbuilder and Oracle preferred. **(Code: SPTCW)**

PROJECT MANAGER
Plans, manages, and completes projects; works with Customer Consultants to determine client needs, and monitors performance. Requires 3-5 years' experience leading technical resources in business applications, including financial, procurement, and inventory systems. Must have knowledge of project management methodologies (CPM, Pert, etc.) and use of project management software (MS Project). Experience in development projects and vended package implementation preferred. **(Code: PMCW)**

APPLICATIONS PROJECT ESTIMATOR
Participates in the development, analysis, and completion of planning projects; establishes good customer relations, and establishes formal estimating process and procedures. Requires 2-4 years' experience in software estimating or project management functions and working knowledge of minimum 1 estimating methodology and associated tools. Must be technically oriented in developing process and performing estimates. **(Code: APECW)**

SDDPC offers competitive salaries and excellent benefits. Qualified candidates should send resume & salary history/requirements to: **SAN DIEGO DPC, Attn: HR Dept._____, 5875 Santa Fe St., San Diego, CA 92109; FAX: (619) 581-7982; or E-mail (in plain ASCII Text, not as an attachment): hr@sandpc.gov** No Phone Calls, Please. EOE.

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- **Data Base Analyst** - Oracle 7 and Oracle 7 Business Suite Administration and/or applications experience.
- **Help Desk Coordinators** - User problems and requests, accurately determining nature and severity of issues.
- **MIS Project Managers** - Project plan development; resource/ task planning; task/staff/budget management.
- **Network Analysts** - Novell & Windows experience required, NT a plus.
- **Software Configuration & Release Control Personnel** Administrators and Management positions available
- **Systems Administrators/Analyst** - Multiple experience levels needed, some requiring OS internals knowledge.

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Programmer Analyst: Analyzes, programs, tests, develops and modifies various software systems which are installed in HP UNIX and by using Business BASIC, IDOL-IV Access, Visual Basic and Visual C++ to create appropriate graphic user interfaces and other data accesses as required by various management staff. Programs and develops equipment software tracking system as part of an production planning support software package system using Visual Basic. Prepares and analyzes appropriate workflow charts and diagrams to illustrate program sequences and modifies programs in accordance with program's intent. Installs and tests programs and modifies such programs to ensure proper integration to program into entire computer system. Requires Master's Degree in Computer Science or Management Information Systems. In lieu of Master's degree will accept Bachelor's degree in Computer Science and two years direct experience. Education to include completion to one project in the development to production planning decision support software package using Visual Basic and one course in Logistics Management. Must have proof of legal authority to work permanently in the U.S. 40 hours per week, 9:00 a.m. to 5:00 p.m. Salary $37,000 per year. Please send resume to: Phillip J. Lattore, Director of Information Systems, INX International Ink Company, 651 Bonnie Lane, Elk Grove, IL 60007. No calls.

Software Engineer. Develops and creates database integrated information systems for performing on-line and batch transactions using structured systems analysis and logical/physical design utilizing data and process modeling by creating various modules and subsystems which are installed on an IBM 3090 mainframe computer system. Performs system engineering and testing using CASE tools including ADW in a CICS, DB2, VSAM, IDMS/R, ADS/O and COBOL II environment to insure system compatibility of the newly created modules. Requires M.S. degree in Computer Science. Also requires 2 years experience in the job to be performed. Hours: 9:00 a.m. - 5:00 p.m. 40 hours per week to $55,000.00 per year salary. Must have proof of legal authority to work permanently in the United States. Please send resume to: Mr. Ashish Kathuria, Vice President, Proficient Business Systems, Inc., 105, Anne Court, Vernon Hills, Illinois 60061. No Calls.

Application Programmer. Programs, tests, implements, debugs and modifies business database and decision support systems application program. Performs programming for interface configurations data structure development and security schemes to insure appropriate integration of software into various information systems. Programs and tests application support software to solve Client/Server problems and insures that programs are appropriately configured to be installed in various networks and are capable being used in alternative telecommunication systems such Internet and Intranet. Performs appropriate programming of Microsoft Access, Power Point, Macro programming of MS Excel in conjunction with an Oracle relational database using Visual Basic and C Language. Requires Bachelor's degree in Computer Science or Mathematics. Also requires six months experience in the job to be performed or six months experience as a Research Assistant, Computer Applications. If experience in related field, entire experience must include programming in Visual Basic and C Language to implement Microsoft Access MS Excel including Macro programming and Power Point for implementation in an [illegible] skilled in a Client/Server Network environment. Must have proof of legal authority to work permanently in the U.S. 40 hours per week, 9:00 a.m. to 5:00 p.m. Salary: $32,700.00 per year. Please send resume to: Dr. Jin Tian, Director of the Office of Institutional Planning and Research, DePaul University, 25 East Jackson Boulevard, Chicago, IL 60604-2287 No calls.

Senior Software Engineer. Designs, develops and modifies multimedia MS Access database systems by using Microsoft Visual C++, MFC, Windows SDK, Access, Video for Windows, Quick Time, Director and Debabelizer. Performs appropriate video and audio programming for implementation of such databases on Windows 95, Windows 3X, and Macintosh operation systems including development of appropriate DLLs to insure appropriate software linkage. Requires Bachelors degree in Electrical Engineering or Computer Science. Also requires one year and six months experience in the job to be performed or one year and six months experience as a Software Engineer. In lieu of one year and 6 months direct experience will accept one year and six months experience as a Software Engineer if to least 9 months experience is in the job to be performed and the remainder of the experience includes use of Windows [illegible] to implement a data or [illegible] system. Hours: 9:00 a.m. - 5:00 p.m. 40 hours per week to $50,000.00 per year salary. Must have proof to legal authority to work permanently in the U.S. Please send resume to Illinois Department of [illegible] State Street -3 South, Chicago, Illinois 60605. Attention: Brenda Kelly, Ref. #V-IL 15504-K. An Employer Paid Ad. No Calls. Send 2 Copies of Both Resume & Cover Letter.

Software Consultant. Provide services to clients in design & development of specialized software packages: design & develop software, systems & modules with PowerBuilder, Oracle & CASE tools, develop replication systems & make modifications in designs; write shell scripts; design & develop security procedures; design commercial systems using CASE tools, install Oracle, tune applications, troubleshoot internal errors & provide technical support to users, tune SQL scripts, set DB parameters, develop subsystems & stored procedures. Use HP9000, SCO UNIX, IBM PC's, SQL*NET, Novell Network, Oracle CASE tools, Uniface, SQL*DBA & Oracle Reports to complete duties. $45,000/yr. 40 hrs/wk. B.S. or foreign equivalent in Computer Sc. or Computer Eng & 2 yrs. exp. in job offered w 2 yrs. related exp. as Applications Eng or Systems Analyst. Exp. in related occupations should include use of Powerbuilder, Oracle, CASE tools, SQL*DBA, HP9000, SCO Unix, SQL*Net, Novell Network, SQL Uniface & Oracle Reports. Send copies of resume & cover letter to the IL Dept. of Employment Security, 401 South State St., 3 South, Chicago, IL 60605 Attn: Joan Sylatus. Ref #V-IL 15833-S. An Employer Paid Ad. No Calls. Must have proof of legal authority to work permanently in the U.S.

Programmer/Analyst. Creates, designs, codes, tests, modifies an IBM mainframe base computer processing system in a DB2 and CICS environment. Uses COBOL II IBM Workbench, Install 1, DB2 File Aid, QSAM File Aid as well as Panvalet and other CASE tools to perform software engineering development modification. Performs appropriate application development screen design and modification of program logic and codes to insure proper system function and performance. Requires Bachelor's degree in Computer Science. Also requires nine months experience in the job to be performed. Hours: 9:00 a.m. - 5:00 p.m. 40 hours per week at $55,000.00 per year salary. Must have proof of legal authority to work permanently in the United States. Please send resume to: Thomas L. Bell, I.T. Resource Manager, Systems Resources Consulting, Inc., 2001 Butterfield Road, Suite 275, Downers Grove, Illinois 60515. No Calls.

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Programmer Analyst. Will analyze, code, test, design, develop and modify various business application software to insure proper data acquisition and report generation based upon end users requirements. Will document, design, and develop various user interfaces, analyze requests of users and groups to design and develop software programs using BAL and Easytrieve Plus in conjunction with an AS400 mid-range computer system. Will develop and design business planning control systems for use in a warehouse destination system. Analyzes such systems to insure flexibility and adaptability by creating various input and output formats and design specifications including program coding and testing using various testing procedures. Insures system integrity, like integration and performs implementation of system recovery techniques to insure against system failure. Requires Master's degree in Computer Science, Education to include completion of one course in Operating Systems Utilities and one course in Assembler language. Education to include completion of one project in use of recovery techniques for database system and one project in the implementation of analysis design techniques for a manufacturing company. Hours: 9:00 a.m. - 5:00 p.m. 40 hours per week at $39,520.00 per year salary. Job Location - Barrington, Illinois. Must have proof of legal authority to work permanently in the U.S. Please send resume to: Illinois Department of Employment Security, 401 South State Street - 3 South, Chicago, Illinois 60605. Attention: Sheila Lindsey. Reference #V-IL 15843-L. An Employer Paid Ad. No Calls. Send 2 copies of Both Resume & Cover Letter.

W A N T E D

-Director - Information System Services -

St. Joseph Regional Health Center, located in Bryan-College Station, home of Texas A&M is seeking a Director of Information System Services to be responsible for planning, organizing, and coordinating the operations and implementation of health care systems in our 240 bed acute care facility. This includes customer training and support, documentation, operations, capacity planning and network support.

The position requires a Bachelor's degree, Masters in MIS preferred, with experience in planning, supervising, and controlling complex systems. Knowledge of financial and clinical health care information systems required. MEDITECH preferred. The talented individual can expect a salary and benefits package commensurate with experience.

Interested persons can call (409) 776-3924 for more information or send/fax/e-mail a resume to:

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Attn: Human Resources
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SYSTEMS ADMINISTRATORS/DATABASE ADMINISTRATORS/APPLICATION DEVELOPERS:
To Design, develop and enhance applications in a Client - Server environment. Candidates with experience one or more of the following areas: **POWERBUILDER, ORACLE, PL/SQL, OS/2, Visual Basic, Access OLE, OOA/OOD, SUN/Solaris, Sybase, LOTUS Notes, MS DOS, MS/Windows, C++, PERL, Kerberos, Tivoli, Centerlo, Visual, AIX/SP2, NP-AIX/MATIV, CDMDA, SQL PowerSoft, DeVita, TCP/IP, SPX/IPX, MODERN Software, DIAGRAPHICS.**

SYSTEMS PROGRAMMERS: with at least 5 years experience installing & tuning MVS/ESA and Parallel Sysplex Environment. Knowledge in using MICS & CA-ACF2 products.

COMMUNICATIONS ENGINEERS: Experience in one or more of the following areas in the engineering, planning & installation of corporate Computer & Comms. Systems including data networking associated with new technology such as Client Server Novell Netware 4 FMEE, DMS100, PDS, SDH, Optics, Banet, DACS, OSP, G.A., LAN/WAN Administrators, Novell, Milinet, NPDynamics, Cisco Routers, Wintel, Sylan Hubs, ATM.

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Programmer/Analyst - Design, develop & implement software systems for accounting functions. Analyze, design, develop & maintain accounting application programs. Prepare detailed specifications, code, test, debug, implementation & documentation of systems & procedures using FOCUS, PROGRESS, REXX, RAMIS, JCL, COBOL, ISPF, LOTUS 1-2-3, UNIX, DOS 5.0 and IBM VM/CMS. Bachelor's in Computer Science or Mathematics. Requires two years of experience as programmer/analyst including 1 year designing software systems for accounting applications using FOCUS, PROGRESS, REXX, RAMIS, JCL, COBOL, ISPF, Lotus 1-2-3, UNIX, DOS 5.0 and IBM VM/CMS. 40 hrs/wk, 7 a.m.-3:30 p.m. $49,000/yr Employer paid ad. Send resume to 7310 Woodward Ave, Rm 415, Detroit, MI 48202. Ref # 127096.

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Programmer Analyst I & II Bachelor's in CIS or equivalent. Business applications, COBOL, IA/Plus or other administration applications. WEB served forms/information. Support IA/Plus application moving to WEB interface. Telephone & Voice Response, Kermit... Internet applications.

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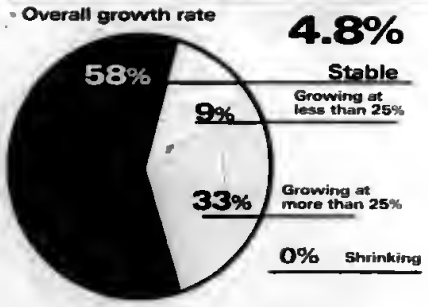
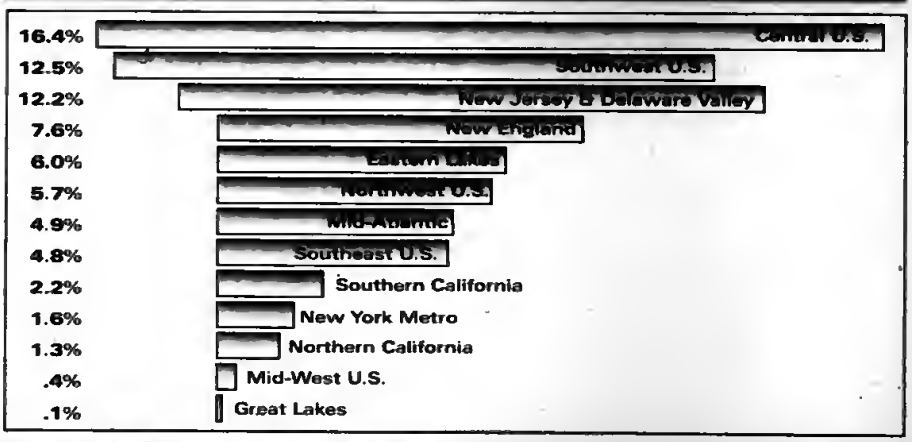


Survey basis:
115 Technology firms involved in Artifical Intelligence Software

Survey conducted between October '96 and December '96

Regional Growth Analysis



CompTech, a directory publisher in Woburn, Mass., tracks the U.S. 35,000 technology manufacturers. This survey relates to the 29,363 tracked firms with fewer than 1,000 employees.

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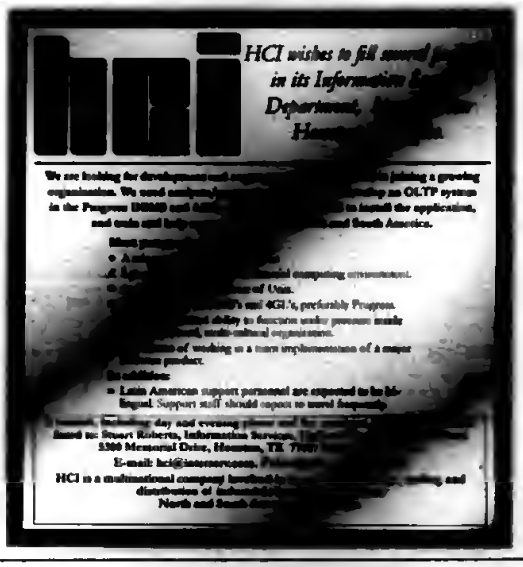

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Consultant: Design, develop, test & implement software for Management Information Systems. Tools: COBOL, CICS, DB2, MVS, C, SQL, Fortran, Basic. 40 hrs/wk, 9am - 5pm. $56,000/yr. B.S.* in Computer Science as well as 5 years in job offered or as Software Developer required. (*3 yrs undergraduate plus 1 yr in software development acceptable in lieu of B.S.) Previous experience must include: COBOL, CICS, DB2, MVS, SQL. Submit resumes to the following address: Dept. of Labor/Bureau of Operations, 1320 Exec. Ctr. Dr., Atkins Rm. 244, Tallahassee, FL 32399-0667. RE: Job order number: FL-1535396.

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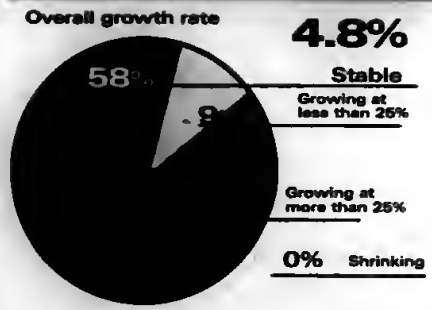

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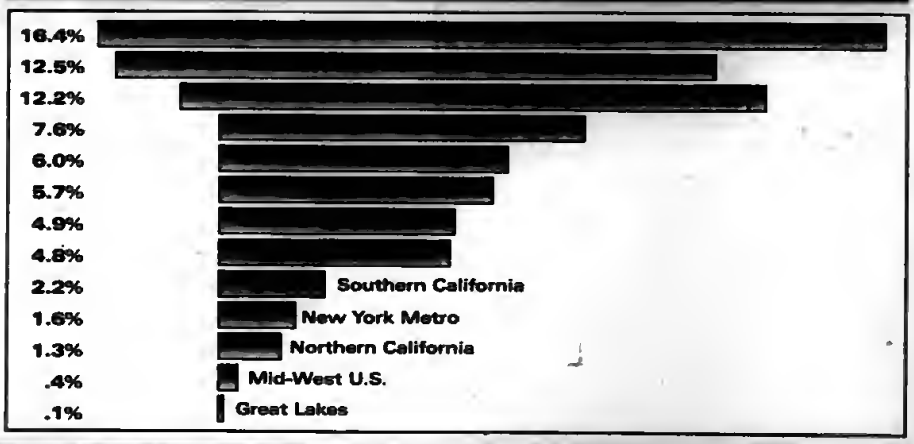

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TECHNOLOGY ROUNDUP

By Alan Radding

UPS MINIMIZES DATA LOSS

With the season of Nor'easters racing up the East Coast and storms blowing in off the Pacific, it's time to think about the reliability of power. Of course, you don't need a natural disaster to bring down the power. A clumsy squirrel or careless power company worker can knock out power in a flash and send a morning's worth of work off to oblivion, where it is lost forever.

If your desktop system automatically saves your work periodically or you diligently stop and save as you go, you can recover all but what you've done since the last save if there is a sudden power outage. Otherwise, you need an uninterruptible power supply (UPS).

Unlike the big UPS systems intended to keep airport control towers and the like functioning through extended outages, low-end desktop UPS devices provide five to 15 minutes of battery backup power, just enough to save and close all applications and gracefully shut down the system. You really can't keep working much beyond that, because a power outage usually takes down the heating, air conditioning and lights, too.

Low-end desktop UPS devices fall into one of two groups: standby (off-line) systems or online interactive systems. Standby systems, the less expensive of the two, consist primarily of a battery, fast switch and power sensor. When the UPS senses that power has dropped below an acceptable level, usually around 104V, it switches to the battery. The switch takes place in less than 10 msec. A PC chip can usually ride out a power loss of several hundred milliseconds. Beeps alert you that power has failed in case you haven't noticed.

Online interactive systems cost a bit more but provide some power conditioning in addition to the backup power. These systems are configured like off-line systems, but they add filters to smooth the spikes in the power flow so a stray surge doesn't fry your CPU. Online interactive devices, unlike standby devices, eliminate the need for surge protectors.

Prices for standby UPS devices begin at less than $100. The longer they can provide power, the more they cost, because more power requires more battery. In terms of power, low-end standby systems top out at 300VA. Prices for online interactive systems begin at less than $200.

At the low end, the choice is price-driven, says Jeff Shepard, president of Darnell Group in Norco, Calif., a publisher of power electronics information. Some models also sport energy-saving features and battery-status monitors. More expensive systems offer Simple Network Management Protocol management and hot-swap replaceable batteries.

Demand for UPS devices is growing. The standby power category rang up $545 million in sales worldwide in 1995. It was expected to hit $612 million last year, a 12% increase, and to top $1 billion in 2001, reports Jennifer Kierney, an analyst at Frost & Sullivan, a technology market research firm in Mountain View, Calif.

The online interactive market was expected to reach $890 million in worldwide sales last year. That is up from $780 million in 1995, a 14% gain. Kierney projects it to hit $1.8 billion in 2001.

Driving the growth of low-end UPS devices is concern about the reliability of the power supply. "People should be concerned about poor quality," says David Wyman, director of power protection research at Venture Development Corp., a market research firm and consultancy in Natick, Mass.

Power industry trade groups warn of a reduced cushion in the nation's power capacity in the coming years, which may lead to more power disruption.

But big-picture power concerns aside, low-end UPS systems represent inexpensive peace of mind and ensure that you won't lose work because somebody fumbling in a utility closet bumped the circuit breaker.

Radding is a freelance writer in Newton, Mass.

Sampling of low-end models

Leading vendors of desktop UPS devices include American Power Conversion (APC), Best Power, Inc., Tripp Lite Manufacturing and Exide Electronics Corp. Each offers a broad range of products. Following is a sample of low-end models (standby and online interactive) with power ratings and list prices:

APC, West Kingston, R.I. (www.apcc.com)

Back-UPS 200, 200VA, $119; Back-UPS 280, 280VA, $199

Tripp Lite, Chicago (www.tripplite.com)

SC PERS 200, 200VA, $109; Omnipro 280, 280VA, $169

Best Power, Necedah, Wis. (www.bestpower.com)

Patriot 120, 120VA, $129; Patriot 230, 230VA, $139

Exide Electronics, Raleigh, N.C. (www.exide.com)

OneUPS Plus, Model 300, 300VA, $139; Model 420, 420VA, $199

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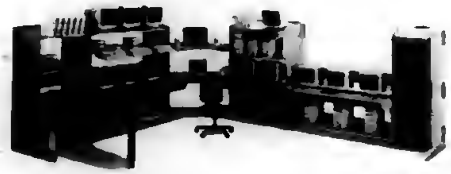

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STOCK TICKER

The Week in Stocks

Gainers

PERCENT

Pinnacle Micro Inc.	84.6
Centura Software	29.5
Datawave Technologies Inc.	28.0
Metro Corp.	20.0
Micron International Inc.	19.1
Computer Network Tech.	17.5
Symantec Technology	16.7
Psinet	16.7

DOLLAR

Western Digital Corp.	7.88
Intel Corp.(H)	7.63
BMC Software Inc.(H)	6.50
Seagate Technology	6.38
Northern Telecom Ltd.	5.75
Motorola Inc.	5.63
Security Dynamics Tech.	5.00
US Robotics	5.00

Losers

PERCENT

Sybase Inc.	-40.9
Computer Assoc. Corp.	-40.8
Informix Corp.	-38.9
Novell Inc.	-38.5
Parametric Technology	-37.5
Cascade Communications Corp.	-36.9

DOLLAR

Sybase Corp.	-40.38
Computer Assoc. Corp.	-40.88
Informix Corp.	-5.88
3COM Corp.	-5.38
Novell Inc.	-5.25
Parametric Technology	-5.13
Cascade Communications Corp.	-5.00

INDUSTRY ALMANAC

No letup for merger mania

Get ready for another corporate buying frenzy in 1997.

Last year saw record numbers of mergers and acquisitions in the computer industry, but this year will overshadow that, given early indications by computer technology firms.

A recent report by Broadview Associates found that 72% of North American information technology firms plan to pursue merger and acquisition activity this year, up from 64% at the same time last year.

The overriding reason: boosting financial performance to impress Wall Street (see chart).

"Five years ago, if a company was growing 25% to 30%, that was pretty good growth. Now, with Internet and client/server technology, there is a drive to grow greater than 50%," said Charlie Federman, Broadview's chairman. "There is real pressure with these organizations to keep up with their peer groups."

KEEP WALL STREET HAPPY

Why companies that completed mergers plan to merge with or acquire other companies this year:

Increase shareholder value	72%
Increase earnings	62%
Increase revenue growth	59%
Lead market	59%
Acquire new technology	27%
Acquire new channels	26%

Source: 200 senior IT executives from high-growth companies

Source: Broadview Associates L.P., Fort Lee, N.J.

But past results show mergers and acquisitions can deliver the goods.

More than 70% of the companies that completed mergers or acquisitions said they successfully met their goals.

The report by the Fort Lee, N.J., mergers and acquisitions advisory firm predicts this year will also see a different kind of acquisition focus. Federman dubs this the third wave of Internet-related merger trends.

The first wave involved the telecommunications companies' need to buy Internet service providers. In the second wave, Internet tools makers merged. Now, Internet content will be king, as media companies scramble to provide the best content.

That scenario is upheld by the Broadview report numbers, which show more media companies (89%) than any other category ready to whip out the checkbook. Hardware and service companies, even with more than half of their members considering mergers, showed the lowest interest in the market.

With media companies, the revenue opportunity is logarithmic, Federman said. This is because Internet access is now a commodity, while adding content is where the value and results will lie. — Tim Ouellette

Exch	52-Week High	52-Week Low		Jan 10 '97	Wk Net Change	Wk Pct Change
COMS	81.56	13.50	3 COM Corp	72.13	-6.50	-7.2
ANT	66.00	49.83	AMERITECH Corp	57.50	3.00	5.0
T	46.68	31.83	AT & T	50.38	3.25	3.6
ASND	75.25	38.75	Ascend Communications	35.50	-4.12	-6.7
BNYN	11.00	1.25	Bay Networks Inc	4.50	-0.81	-14.3
BAY	49.00	18.19	Bay Networks Inc	20.50	0.13	0.6
BEL	80.50	43.59	Bell Atlantic Corp	63.38	-3.00	-4.5
BLS	45.00	35.25	BellSouth Corp	38.63	3.38	3.0
BRET	42.23	11.38	Broadband Technology	24.50	3.75	10.1
CS	43.93	26.50	Cabletron Systems	33.63	0.63	1.8
CSCC	91.25	70.81	Cascade Communications	57.88	-0.88	-1.2
CCPN	34.13	11.63	Centigram Communications	13.63	0.13	0.9
CSCO	49.13	32.00	Cisco Systems Inc	50.00	0.13	0.6
CLIX	9.25	3.50	Compression Labs Inc	4.06	-0.19	-4.4
CMNT	10.50	4.00	Computer Network Tech	5.88	0.88	17.5
RCOM	13.75	4.75	Ericsson	5.63	0.25	4.7
DIGI	38.50	12.63	DSC Communications	18.94	0.44	2.9
FORE	44.75	33.38	FORE Systems Inc	32.63	1.50	4.4
GDC	18.63	9.13	General Datacomm Inds	10.50	-0.88	-7.7
GSX	44.75	32.00	General Signal Networks	44.75	2.25	5.3
GTE	49.25	37.75	GTE Corp	43.88	1.63	3.8
IIJ	33.13	25.75	Incentive Tech	30.13	3.88	8.8
MADGF	46.63	8.13	Madge Networks NV	11.63	1.25	12.0
MCIC	31.88	22.38	MCI Communications Corp	25.25	-0.25	-0.7
MNPL	34.50	5.50	Microcom Inc	12.88	1.75	15.8
NETM	18.88	3.38	NetManage Inc	9.13	-0.38	-3.8
NTRX	10.88	5.75	Netrix Corp	5.68	0.94	20.0
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NWK	50.00	11.13	Network Equipment Tech	17.00	0.00	0.0
NETG	30.25	13.00	Network General	29.25	0.25	0.9
NYN	37.25	-20.25	Newbridge Networks Corp	32.13	3.25	11.2
NI	68.75	40.75	Nortel Inc	68.75	5.75	9.1
NOVL	15.63	8.75	Novell Inc	9.00	-0.13	-1.1
NYN	39.25	42.00	Nynex Corp	47.63	2.00	-4.0
OCTL	51.75	12.63	Octel Communications Corp	17.25	0.25	1.5
ODSI	29.00	15.25	Optical Data Systems Inc	18.50	0.25	1.9
PBC	19.00	23.00	Pacific Telesis	33.50	1.38	3.7
PCTL	44.75	29.50	Pacific Telesis Group	34.38	1.25	3.7
PTON	7.50	3.00	Proxicom Inc	3.88	-0.16	-4.1
RBCO	7.00	3.50	Racotek Inc	4.53	-0.25	-5.7
RBTX	10.88	1.88	Retix	5.00	2.00	33.3
SBC	60.25	46.00	SBC Communications	50.00	2.75	5.2
SFA	80.38	12.00	Scientific Atlanta Inc	15.00	0.25	1.8
SHVA	97.25	21.19	Shiva Corp	21.19	14.31	80.3
FON	43.50	34.50	Sprint Corp	39.13	-0.75	-1.9
SMSC	18.75	8.19	Standard Microsystems Corp	10.00	0.50	5.3
USRX	105.38	52.75	US Robotics	73.00	5.00	7.4
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WBC	25.75	9.00	Wescom	10.44	1.81	8.5
XYLN	96.00	25.50	Xylan Corp	60.00	0.13	0.4
AALR	15.25	6.13	Advanced Logic Research	12.00	1.00	7.0
AAPL	35.50	16.00	Apple Computer Inc	18.00	3.75	92.2
ASTA	9.00	3.94	ASTA Research Inc	3.06	0.68	8.1
CPQ	83.13	39.88	Compaq Computer Corp	79.50	3.00	4.0
DELL	64.00	11.50	Dell Computer Corp	58.00	4.25	7.9
GATE	66.25	19.00	Gateway 2000 Inc	53.38	-0.50	-0.9
HWP	57.75	36.38	Hewlett-Packard Co	55.88	2.50	4.6
MUEI	23.50	8.13	Micron International Inc	23.38	1.75	16.1
NIPNY	65.00	49.88	NEC Ameerica	50.88	1.00	-3.1
SGI	40.88	17.88	Silicon Graphics	30.13	1.75	1.6
SUNW	85.19	18.00	Sun Microsystem Inc	27.88	-0.75	-2.7
AMH	14.00	6.75	Ambarh Corp	11.88	-0.88	-5.0
DGN	19.13	9.00	Data General Corp	13.38	-0.25	-1.7
DEC	36.50	28.75	Digital Equipment Corp	35.00	1.25	-3.4
IBM	166.00	83.13	IBM	163.88	5.00	3.2
MEDC	20.25	6.25	Meridian Data Inc	9.25	0.00	10.5
NETF	6.50	2.25	NetFrame	3.13	0.19	6.4
SQNT	18.88	10.13	Sequent Computer Sys	10.50	0.63	3.5
SEQS	5.88	1.88	Sequoia Systems Inc	2.25	0.00	2.9
SRA	33.25	19.63	Stratus Computer Inc	26.88	1.75	6.1
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SQAK	50.75	37.00	SQA Inc	32.00	-0.38	1.2
SOTA	19.75	9.10	State of the Art	13.13	1.00	3.8
SSW	31.38	20.25	Sterling Software Inc	31.13	-0.63	-2.0
SDRC	37.38	25.00	Structr Dynamics Research	23.75	2.00	10.1
SYBS	35.88	13.50	Sybase Inc	17.63	6.51	1.8
SYMC	14.13	8.75	Symantec Corp	12.13	1.00	9.6
SNPS	50.88	27.88	SynOpsys	61.63	3.63	3.8
SSAX	50.75	8.25	System Software Assoc	12.13	1.15	10.2
SYSK	30.00	4.38	Systemsoft Corp	14.88	-2.63	-15.8
TRUV	8.63	2.44	Truevision Corp	3.00	0.25	9.0
VIEW	17.50	8.38	Viewlogic Systems	11.50	0.13	1.1
VMRK	12.63	3.00	Vmark Software Inc	7.19	-0.50	-6.5
WALK	15.63	9.88	Walker Interactive Systems	14.25	-1.25	-8.6
WALL	27.00	18.25	Wall Data Inc.	16.50	1.50	10.0
WANG	50.13	15.88	Wang Laboratories Inc	21.63	1.25	6.2
AOL	71.00	22.38	America On-Line	50.50	4.75	10.1
BBN	37.63	13.63	BBN Corp	25.13	2.75	12.3
CSRV	23.00	8.63	Computer Sve Corp	11.00	0.50	4.8
EDFY	25.75	12.38	Edify Corp	14.50	-0.63	-4.1
LCOS	69.25	5.75	Lycos Inc	32.13	1.50	12.8
NETC	64.00	12.25	Netcom On-Line	19.25	-2.13	-8.0
NSCP	88.00	34.50	Netscape Comm Corp	88.75	10.00	-17.6
OMKT	42.25	11.00	Open Market Inc	19.00	-0.31	-3.0
PSIX	21.00	8.75	PSINet	13.11	1.80	18.7
QDEK	25.00	3.94	Quarterdeck Corp	4.00	0.00	51.4
RAPT	88.25	18.75	Raptor Systems	20.50	0.63	3.1
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ADI	37.25	12.75	Analog Devices Inc (H)	27.00	1.00	4.0
CHPS	20.50	8.00	Chips and Technologies	13.13	2.00	13.0
CRUS	27.63	12.63	Cirrus Logic	16.38	0.25	1.6
CY	16.63	9.13	Cypress Semiconductor Corp	14.63	0.00	0.0
CYRX	50.50	19.00	Cyrix	30.50	0.88	4.5
INTC	142.00	88.81	Intel Corp (H)	142.00	7.63	5.6
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CBEL	6.13	1.50	Cabletron Corp	1.88	0.00	0.0
CREAF	31.88	3.88	Creative Technology Ltd.	10.75	-0.38	-3.4
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DTM	9.88	4.13	Datatools Corp (H)	8.88	0.50	6.2
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IMAG	80.63	13.50	Imagine Corp	36.00	-2.00	-6.4
INEL	11.50	3.00	Intelligent Electronics	8.23	-0.00	-4.1
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MICA	25.00	7.00	Micronics Inc	22.75	2.00	8.8
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SEIC	26.00	17.75	SEI Corp	21.00	-0.93	-2.8
SMED	72.13	42.25	Shared Medical Systems	49.75	0.75	0.9
SSPE	40.25	17.00	Software Spectrum Inc	23.25	0.50	1.3
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SNDY	47.00	27.50	Sundard Data Systems	28.25	-0.75	1.9

KEY (H) = New annual high reached in period (L) = New annual low reached in period

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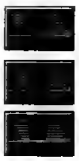

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Cheap AOL pricing creates run on airwaves

By Mitch Wagner and Steve Ulfelder

AMERICA ONLINE, INC. users are squawking about difficulties logging on, which some blame on a new all-you-can-eat pricing plan that has increased demands on the system.

"If I can't use the system, I'm not paying for it," said Jeff Johnston, a partner at Heights Guitars, Inc. in Cleveland. Johnston last week said he hasn't been able to log on and collect messages for a week. "Maybe they can't handle all the people on," he said.

BUSINESS USES

AOL is primarily a consumer service, but it has its business uses. Small businesses, such as Johnston's guitar company, often use AOL for electronic mail and small-scale electronic commerce. And employees of big businesses often use AOL as a backup E-mail system when their networks are inaccessible. Analysts estimate 15% of the E-mail sent on AOL is business-related.

AOL last month announced a pricing plan that gives users unlimited usage for $19.95 per month. Previous pricing plans were on a per-hour basis. The company said it plans to upgrade its network to allow for increased demand. It encouraged users to compose and read E-mail while disconnected from the network.

The complaints came during a busy week for AOL. On Wednesday, Nicholas M. Ryan, 20, of Victor, N.Y., pleaded guilty to computer fraud. Ryan, a hacker nicknamed "Happy Hardcore," built a program called "AOL4FREE" that let users break in to AOL and use its services without paying. Ryan faces a penalty of up to $250,000, restitution and five years' imprisonment.

AOL also said Wednesday it will temporarily cut off access from phone numbers in Russia because of the large amounts of fraud in that country.

Fix for NT 4.0 comes up short

CONTINUED FROM PAGE 1

er than having to spend $150 to call Microsoft's technical support.

SP2 was designed to enhance the performance of Windows NT 4.0's remote access capabilities and fix 100 minor bugs in NT 4.0, including flaws related to TCP/IP addresses, memory leakage problems and errors in trying to copy and read files on some CD-ROMs.

Enzo Schiano, group product manager for Windows NT, acknowledged that SPa had problems but said Microsoft engineers have so far found only two flaws: an incompatibility with the Norton AntiVirus program and problems with its Multilink remote access communication facility.

Schiano said Microsoft late last week posted the software patches to address these two problems in SP2, about one week after it began receiving reports of problems.

But Jeff Asselin, a systems operator on the CompuServe NTWORK, NTSERVE and WINNEWS forums, said he posted a message on the forums saying he has uncovered at least four major bugs.

Users also dispute Microsoft's contention of just two bugs in SP2. They recounted a slew of malfunctions that occurred after they installed SP2 on their NT machines.

Problems include an inability to access drive A, lost Internet and other remote connections, difficulty installing a variety of modems and the inability of Windows NT Workstations to access Windows NT Servers (see chart below).

Schiano said Microsoft is "aggressively and vigorously testing" for further bugs and looking at all bug reports from customers. "If any other problems crop up, we will fix them immediately," he said.

That is small consolation to users whose systems were beset by Blue Screen of Death crashes (see story at right). A Blue Screen of Death occurs when your screen goes blank and the system crashes.

BEEN BURNED

Scott Rackliffe, vice president of IS at Farm Credit Financial Partners, Inc. in Agawam, Mass., said his firm eschewed SPa and even NT 4.0 because of similar bugs in the Service Pack for Windows NT 3.51 a year ago.

"We were a bleeding-edge Windows NT 3.51 user, and we bled alright," Rackliffe said. "We had the Blue Screen of Death on a regular basis. Everyday we came in and wondered whether or not we'd get any work done because we never knew what hardware and software problems would bite us next."

Despite the fact that for the first time Microsoft included an Uninstall option in its SP2 release, Patrick Campbell, chief technical instructor at TechTeach International, Inc. in Arlington, Va., said it did his firm little good because they couldn't get it to work. (see story above)

Stu Sjouwerman, executive vice president of Sunbelt Software Distribution, Inc. in Clearwater, Fla., said fixing bugs after the software is released doesn't help users who have lost files and spent dozens of hours trying to undo the damage.

He said Microsoft could have averted many, if not all, of the SPa problems if it had allowed third-party software vendors to test the bug-fix package against their applications before releasing it to the public.

"The bottom line is that end users shouldn't have to field-test their bug fixes on production networks," Sjouwerman said.

Jon Oltsik, an analyst at Forrester Research, Inc., said Microsoft's release of the "sloppy Service Pack a" is indicative of overall spotty support.

"Technical support and quality assurance are becoming real Achilles' heels, and Microsoft is not stepping up to the plate the way it should," he said.

Users tell peers: Steer clear if you can

It can be unnerving when a product purported to be large has a flaw of its own.

"After experiencing the Blue Screen of Death four times in a row, I give a thumbs down to installing SP2," said an IS manager at a large pharmaceutical firm in the Northeast, who requested anonymity. "It has problems with the top virus programs and Corel knows what else. My advice to others is, don't install SP2 unless it fixes a specific bug you know exists in your environment."

Ron Milliorn, chief of technology at Systems, Inc., a systems integrator in New York, agreed. "If it's not broke, don't fix it. There's no need to go borrowing trouble, especially when it's obvious that SP2 is not ready for prime time," he said.

Even with purported fixes now available from Microsoft, Milliorn said he recommends that even the most technically proficient network administrators consider caution. "Many of the SP2-related crashes have been random. It installs and runs fine on one or two servers and then, 'Bam,' it will crash a third Windows NT machine for no apparent reason," he said.

That's what happened to expert users and instructors at Tech-Teach International, which holds Windows NT training classes for 1,000 users per month. Chief technical instructor Patrick Campbell said his firm never even got as far as the Blue Screen of Death.

"We were instant victims. SP2 crashed our Windows NT 4.0 server at the select mouse screen," Campbell said. He said while Tech-Teach staffers like to think of themselves as Windows NT experts, it took staffers seven hours to figure out why the systems crashed and another three hours to make the fix and restore user accounts. — Laura DiDio

DO-IT-YOURSELF REPAIRS

Problem	Fix
Microsoft Money 5.0 fails to connect to Money Online	Uninstall SP2
SP2 corrupts the NT File System, which causes a Blue Screen of Death	Users must completely reinstall NT File System
Microsoft Exchange Server malfunctions and sends out messages of illegal and unknown users	Uninstall SP2
Users who have ATAPI/IDE CD-ROM drives installed on Windows NT Workstation get a Blue Screen of Death	Copy original ATAPI.SYS driver into the driver directory, and reboot
Applying SP2 over a network may damage the NT File System and ADVAPI32.DLL files, making the Windows NT system unbootable if it's a File System device	Install Windows NT 4.0 into another directory and manually restore destroyed files

WEB

Microsoft's latest patch for Service Pack 2 can be found at: ftp://ftp.microsoft.com/bussys/winnt/winnt-public/fixes/usa/nt40/hotfixes-postsp2.

Windows NT Server seen gaining on NetWare this year. See page 52.

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COMMENTARY

What's Next for Apple?

David Coursey

Here's some advice: If you find yourself about to be pushed off the top of a 20-story building, go ahead and jump. At worst, the result will be the same as being pushed. At best, you'll find a way to land on something soft, and the crowd will cheer wildly. Either way, you'll get points for your diving technique.

And Gil Amelio is one hell of a great diver. Actually, Amelio and Ellen Hancock both. Previously described in this space as "The Dynamic Duo of Cluelessness," Amelio and Hancock — Apple's chairman/CEO and chief technical officer, respectively — faced with Apple's declining fortunes, did what had to be done.

That's not to say Apple had to spend $400 million to give Next a graceful exit from its swamp — what else can be said about a company that's a decade old, is breaking even at $50 million and has a worldwide total of 245 customers — but Amelio and Hancock had to do *something*, and the options were few. Apple's choice was to buy Be for a consumer play or Next for an enterprise play.

The problem with the enterprise play is that the world doesn't need another enterprise player. At least, that's what my enterprise friends (along with common sense) tell me. But I'm open on this one. I'd like to think Apple might edge its way in and surprise its detractors.

(Please take a moment and drop me a line if you'd be willing to help me understand this more completely. Based on what you've heard, do you need/want Apple/Next or not? Can Apple succeed where IBM's OS/2 seems to have failed? Can it build a market, as Sun has managed to do?)

Here are some answers to questions I've heard lately:

Yes, I believe Apple is getting into the Intel market — at least with the new Rhapsody operating system and probably with hardware over the next few years. And yes, I think Macintosh sales will stall while people reevaluate their Macintosh purchases. The publishing market pretty much has to stay for now, but consumers and schools have plenty of options.

Just when Apple seemed to be building some new-title development steam, this happens. Macintosh developers likely will sit on their hands while things sort out. Or worse, they may start developing for the new operating system immediately — meaning all the new applications could conceivably run better on a PC than on a PowerPC, both running Rhapsody.

What should an IS department do? As much as I love Apple, I have to recommend delaying purchases until the smoke clears. Unless, that is, you're in the publishing/graphics business or don't much care what happens beyond a 24- to 36-month window. If that's you, please cut Apple a check right away — the company needs the support.

Finally, I've decided that Amelio and Hancock aren't so bad. Sure, they may be leading Apple to ruin. But that probably would have happened anyway, though it might have taken longer if they had let nature take its course. I give Amelio a world of credit for shaking things up, for bringing a new battle to the marketplace and for taking a stand. And Hancock, especially, has worked hard to maintain credibility during some pretty tough times.

So, dear reader, Apple wants to be your computer company. What are you going to say?

Coursey is an industry analyst, consultant and editor/publisher of "coursey.com," an online newsletter available at www.coursey.com. You can send him comments at david@coursey.com.

Life in the network computer ghetto

Charles Babcock

"Hey, Jill, that's a neat network computer you've got."

"Thanks, Mack. I like the color."

"Yeah. But teal doesn't go with the tea stains on your chair. . . . Just kidding, Jill."

Jill, a new account clerk, fiddled with a dial to adjust her screen, rearranged the framed picture of her Lhasa apso and leaned back to admire the shiny case on her desk.

Mack, watching over her shoulder, continued: "Your design is sleeker than mine. I like the teardrop shape. And look at how much they could squeeze into the case because you don't have a disk drive — your 'disk' is out on the 'net somewhere."

"Are you saying you have something I don't?" Jill asked, eyeing him critically.

"I used to. I had a PC. An Apple Macintosh, actually. It wasn't the latest model, but it had a 100M-byte drive."

"What happened to it?" Jill asked.

"They gave me a network computer instead. It was one of the first ones in the door. It's not as nice as yours."

"Why'd they do that?"

"They said my Mac no longer fit their profile for technical support. They said I didn't really need a PC, that I could access all my applications on the 'net. But it sure makes it hard to play Doom."

"You knew how to use a PC?"

"Oh, sure. But Thornton — I mean Mr. Simon, the CEO — said we had to save on the expense of PCs. I was one of the few who already had one who had to give it up."

"I see. I guess it makes sense that they took your PC," Jill said.

"Really? How so?" Mack asked.

"Well, look at us. Do we crunch numbers? Do we do regression analysis, whatever that is? I mean, have we ever amortized a capital investment?"

"Nah, but neither did a lot of people who had PCs. Mine was for drawing the smiley faces we put in the company newsletter."

"Well, my Mom says I have a white-collar job, like it's a big deal or something. But my bosa doesn't think of me as what you'd call a 'knowledge' worker. If I am, I admit I don't know what knowledge I'm working with. Anyway, Mack, it looks like they're going to stop buying PCs for people like you and me."

"I hadn't thought about that. I was wondering what I needed to do to get my Mac back."

"Forget it. You and I don't work on PCs any more. Are you about to become a hotshot analyst? When was the last time you got data directly from the database?"

"I don't do that, but I use a word processor, and at budget time I plug numbers into a spreadsheet for my boss," Mack said ruefully.

"Well then, forget the PC."

"But we *all* used to have PCs," Mack said wistfully. "We felt like we could do more and more with our PCs. If you were stuck, you could turn to your neighbor, who always had the same PC. Sally even brought in a copy of Flight Simulator. It was great!"

"That's part of the problem, Mack. Unless you can prove you're in the right class, you won't get a PC. And playing games isn't the way to do it. You have to be serious about the business."

"The right class? What do you mean?" asked a puzzled Mack.

"The right class. You have to be one of those people who understands the business. You have be, like, a geek. They work 12 hours a day and get a Pentium PC. The rest of us get network computers."

"The right class. I still don't get it."

"It's like the suburbs. There's a nice neighborhood of four-bedroom colonials with BMWs out front, and then there's blocks of ranch houses. If we have classes in housing, why not in computing?"

Babcock is Computerworld's technical editor. His Internet address is charles_babcock@cw.com.

The Back Page

alt.cw

Dispatches & images from the fringes of the electronic frontier

Anecdotal evidence

About five years ago, we were the first on our block to have an Ethernet segment that used infrared lasers. We were promised that it was pretty reliable; as long as we could see the other building, so could the laser.

And so it turned out. Even though we spanned a canal in the foggiest town in France, we managed 98% uptime during the first few (winter) months.

In the spring, we started getting breaks in the connection. We eventually figured out they occurred half an hour after sunrise and sunset. We changed every component in the network but couldn't fix the problem.

One day, I noticed a spider web running between the laser box and the wall. About three days later, it dawned on me. I went up to the roof at the appropriate time and watched a spider walk across the web, climb into the transmission lens and eat its dinner. Meanwhile, I heard, "The link's down again."

We put a cloth, a box of Q-Tips and a can of insecticide in a box marked Network Hardware Maintenance Kit. We set up a weekly schedule for cleaning the laser and had no more problems.

— Contributed by Nick Brown, a network manager in Strasbourg, France

■ Send your alt.cw contributions to mbetts@cw.com. If your item is used, you'll receive a cool T-shirt.

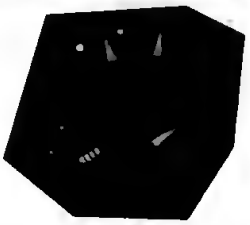
SOMEWHERE OVER PEORIA

We all know airline schedules are unreliable, so check out the Flight Tracker site on the Web (sapphire.thetrip.com). Visitors plug in an airline name and flight number to get a real-time report on the location of the flight over the U.S.

Web civility

Goodness gracious. WebGenesis in Ithaca, N.Y., has introduced software designed to censor dirty words out of Internet chat. The filters are in place at The Globe (www.theglobe.com), a chat site that caters to a population (18- to 34-year-olds) too filly-livered to stand up to some strong language, by jiminy.

— Mitch Wagner



Usenet forums

- **"Is CASE dead?"** (comp.software-eng)
- **"I have a serious hard disk failure, and I'm frightened"** (comp.misc)
- **"Why DEC's market share is so low"** (comp.sys.dec)
- **"60-day waiting period for all new domain names"** (comp.infosystems)
- **"What is the best way to learn C programming?"** (comp.programming)
- **"What is wrong with OO?"** (comp.software-eng)
- **"Using C for safety-critical applications"** (comp.software-eng)

The MicroScribe-3D digitizing arm from Immersion in San Jose, Calif., is used to trace three-dimensional objects and build detailed computer models.

Inside Lines

Amelio's oratoria

Apple Chairman and CEO Gil Amelio's butt-numbing three-hour keynote at Macworld proved that holding several patents hardly makes you a charismatic speaker. "Mamma mia, that was too long," exclaimed Apple Executive Vice President Marco Landi.

PC software maker not on PC after all

Microsoft may want to hire a new director of PC — political correctness. In an ad touting a new entertainment and information webzine for women, Microsoft said it will cover "issues that really matter; from personal trainers to personal relationships." The webzine's name? Underwire. Hmmm. Wonder what the cybergirls will think.

That's what Friends are for

Sun employees are on a Friends watch. Apparently one of the company's much-hyped JavaStations is scheduled to make the network debut on NBC's *Friends* TV show. In the show, Rachel gets a new job in an upscale store. The JavaStation appears, along with a host of other Java stuff, in the new office she shares with a co-worker. Sun employees who correctly list the number of Java-related items that appear on the show will become eligible to win a pair of passes to watch filming of an episode of *Friends* in L.A.

It's (fast) in the mail

The South Central Oracle Users Group was all set to hold its regional conference in Arlington, Texas, next week. Just one small problem: No one was coming because no one knew about the event. A Dallas-based mailing service that does work for Oracle claimed it mailed the group's 9,000 brochures before Christmas, but people never got them, and the U.S. Postal Service said it didn't have any record of the shipment. So the group, which has members in Texas and three other states, rescheduled the conference for Feb. 17-18. Violet O'Brien, the group's president, said new brochures should be sent out this week . . . by the usual mailing service in Houston.

Sybase goes on a jag

To help get its sales types in the mood to fling an upcoming Web application server code-named Jaguar, Sybase brought a real live jaguar to its 1997 sales kickoff meeting in San Diego last week. Unfortunately, the cat got spooked by some truck noise just before its cue call and initially refused to go on stage. Eventually, though, it stalked out and ended up posing for pictures with Sybase officials. Rival Informix Software also held a sales meeting last week, in Atlanta. Asked if there were any wild animals there, an Informix manager said, "Yes, about 2,000 salespeople."

Analyst firm Illuminata recently forwarded this Top 10 list. It includes SAP implementation team responses to problems that surfaced as team members migrated an unnamed company from a mainframe to SAP's R/3 client/server application package:

10— We're working on that with some of our best people.
9— That's a "glitch" in the system.
8 — R/3 won't do that, but we could add it to the requirements list for the next release.
7— It's a learning process . . . with a steep curve.
6 — Down the road, it's a possibility. Of course, it would be billed as a separate project.
5— I never saw that one before!
4— This shouldn't be happening!
3— What's Heinrich's number? Is he in the States this week?
2 — I'm not familiar with WRKD [the prior mainframe software]. You say it could do this in one step?
1— This will get better— trust me!

Send your Top 10 lists to news editor Patricia Keefe at patricia_keefe@cw.com or call (508) 820-8183.

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